
**Assessments for Nickel Creek (0548)
and Nickel Creek FFR (0657) Allotments**

**Owyhee Field Office
Jenna Whitlock, Field Office Manager**

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Table of Contents

| | | |
|------------|--|-----------|
| 1.0 | Background | 4 |
| 2.0 | Allotment Information..... | 4 |
| 2.1 | Livestock Grazing Use..... | 6 |
| 2.2 | Nickel Creek Allotment (0548) | 6 |
| 2.3 | Nickel Creek FFR Allotment (0657) | 6 |
| 2.4 | Physical and Administrative | 6 |
| 2.5 | Soils..... | 7 |
| 2.6 | Riparian..... | 8 |
| 2.7 | Wildlife and Special Status Animals | 9 |
| 2.7.1 | Redband Trout | 9 |
| 2.7.2 | Wildlife | 10 |
| 2.8 | Special Status Plants | 12 |
| 3.0 | Idaho Rangeland Health Standards Evaluation | 13 |
| 3.1 | Description of Standards..... | 13 |
| 3.2 | Methods Used to Evaluate Rangeland Health | 15 |
| 3.2.1 | Upland Data | 15 |
| 3.2.2 | Wildlife Data..... | 17 |
| 3.2.3 | Riparian Data | 17 |
| 3.3 | Early Spring Use (Pastures 2, 16A, 16B, 20, 22, 23) | 18 |
| 3.3.1 | Data Collection | 18 |
| 3.3.2 | Livestock Use..... | 19 |
| 3.3.3 | Standard 1: Watersheds..... | 20 |
| 3.3.4 | Standard 2: Riparian Areas and Wetlands | 22 |
| 3.3.5 | Standard 3: Stream Channel/Floodplain | 25 |
| 3.3.6 | Standard 4: Native Plant Communities..... | 26 |
| 3.3.7 | Standard 8: Threatened and Endangered Plants and Animals | 30 |
| 3.4 | Spring Rest Rotation Use (Pastures 26A, 26B, 27) | 33 |
| 3.4.1 | Data Collection | 33 |
| 3.4.2 | Livestock Use..... | 34 |
| 3.4.3 | Standard 1: Watersheds..... | 35 |
| 3.4.4 | Standard 2: Riparian Areas and Wetlands | 37 |
| 3.4.5 | Standard 3: Stream Channel/Floodplain | 39 |
| 3.4.6 | Standard 4: Native Plant Communities..... | 40 |
| 3.4.7 | Standard 8: Threatened and Endangered Plants and Animals | 43 |
| 3.5 | Spring/Summer Use (Pastures 1, 3, 5, 8, 18) | 47 |
| 3.5.1 | Data Collection | 47 |
| 3.5.2 | Livestock Use..... | 48 |
| 3.5.3 | Standard 1: Watersheds..... | 49 |
| 3.5.4 | Standard 2: Riparian Areas and Wetlands | 51 |
| 3.5.5 | Standard 3: Stream Channel/Floodplain | 54 |
| 3.5.6 | Standard 4: Native Plant Communities..... | 57 |
| 3.5.7 | Standard 8: Threatened and Endangered Plants and Animals | 61 |
| 3.6 | Summer Use (Pastures 7, 13, 17)..... | 65 |
| 3.6.1 | Data Collection | 65 |
| 3.6.2 | Livestock Use..... | 66 |

| | | |
|------------|--|------------|
| 3.6.3 | Standard 1: Watersheds..... | 67 |
| 3.6.4 | Standard 2: Riparian Areas and Wetlands | 69 |
| 3.6.5 | Standard 3: Stream Channel/Floodplain | 73 |
| 3.6.6 | Standard 4: Native Plant Communities..... | 74 |
| 3.6.7 | Standard 8: Threatened and Endangered Plants and Animals | 78 |
| 3.7 | Fall Use (Pasture 10)..... | 81 |
| 3.7.1 | Data Collection | 81 |
| 3.7.2 | Livestock Use..... | 81 |
| 3.7.3 | Standard 1: Watersheds..... | 82 |
| 3.7.4 | Standard 2: Riparian Areas and Wetlands | 82 |
| 3.7.5 | Standard 3: Stream Channel/Floodplain | 84 |
| 3.7.6 | Standard 4: Native Plant Communities..... | 85 |
| 3.7.7 | Standard 8: Threatened and Endangered Plants and Animals | 86 |
| 3.8 | Standard 7: Water Quality – Nickel Creek Allotment (0548) | 88 |
| 3.9 | Fenced Federal Range (Pastures 4, 6, 9, 11, 14, 19, 21, 24, 25)..... | 90 |
| 3.9.1 | Data Collection | 90 |
| 3.9.2 | Livestock Use..... | 90 |
| 3.9.3 | Standard 1: Watersheds..... | 91 |
| 3.9.4 | Standard 2: Riparian Areas and Wetlands | 93 |
| 3.9.5 | Standard 3: Stream Channel/Floodplain | 94 |
| 3.9.6 | Standard 4: Native Plant Communities..... | 95 |
| 3.9.7 | Standard 7: Water Quality | 97 |
| 3.9.8 | Standard 8: Threatened and Endangered Plants and Animals | 99 |
| 4.0 | Literature Cited | 101 |
| 5.0 | Appendices..... | 103 |

Assessments for Nickel Creek (0548) and Nickel Creek FFR (0657) Allotments

Standards for Rangeland Health and Guidelines for Livestock Grazing Management

1.0 Background

In 1997, the BLM in Idaho adopted rangeland health standards, which were developed in coordination with the Resource Advisory Councils during the previous two years. There are eight standards, not all of which apply to any one parcel of land. Standards of rangeland health are expressions of the level of physical and biological condition or degree of function required for healthy, sustainable rangelands. Rangelands should be meeting or making significant progress toward meeting the standards. If the standards are met, there should be proper nutrient and hydrologic cycling, and energy flow. Current livestock grazing management is evaluated in these Assessments to determine if it maintains standards or promotes significant progress toward meeting the standards.

Indicators are typical physical and biological factors and processes that can be measured or observed. These Assessments examine the indicators for each standard and use quantitative and qualitative information including inventory data, monitoring data, health assessment information or other observations to evaluate the current status of each indicator for each standard. Observations of each indicator for each standard and trends in measured indicators are discussed below for all of the standards that are applicable to each of the allotments.

Conclusions as to whether or not allotments are meeting or making significant progress toward meeting the standards will be provided in separate determination documents based on information in this document. New information will be considered in developing the final determinations if received in a timely manner.

2.0 Allotment Information

The Nickel Creek Allotment includes 67,604 acres of public land, 1,688 acres of state land, and 3,249 acres of private land in 18 pastures (Table 1, Maps 1N, 1S).. The Nickel Creek FFR (Fenced Federal Range) Allotment contains 1,644 acres of public land, 326 acres of state land, and 6,125 acres of private land in 10 pastures

Table 1. Acreages (2001) by pasture and ownership for the Nickel Creek and Nickel Creek FFR allotments, Owyhee County, Idaho.

| Allotment | Pasture | Pasture Name | Public | State | Private | Total |
|-----------|---------|-------------------------|--------|-------|---------|--------|
| 0548 | 1 | Battleground | 8,850 | 0 | 0 | 8,850 |
| | 2 | Stoneman | 4,645 | 0 | 72 | 4,717 |
| | 3 | Beaver Dam | 759 | 0 | 350 | 1,109 |
| | 5 | Spring Field | 2,296 | 0 | 20 | 2,316 |
| | 7 | Fall Field | 7,549 | 0 | 283 | 7,832 |
| | 8 | Boni | 9,926 | 141 | 1,240 | 11,307 |
| | 10 | Upper Smith Creek | 486 | 235 | 324 | 1,045 |
| | 13 | Castle Creek | 1,549 | 0 | 18 | 1,567 |
| | 16A | Star Table | 1,986 | 0 | 30 | 2,016 |
| | 16B | Castro Table | 2,955 | 0 | 217 | 3,172 |
| | 17 | Big Field | 1,785 | 639 | 0 | 2,424 |
| | 18 | Ben Mills | 3,182 | 0 | 11 | 3,193 |
| | 20 | School Section | 548 | 642 | 112 | 1,302 |
| | 22 | Rock Field | 423 | 0 | 0 | 423 |
| | 23 | Airport Field | 928 | 0 | 328 | 1,256 |
| | 26A | Sheep Hills | 5,586 | 0 | 0 | 5,586 |
| | 26B | Sheep Hills | 6,757 | 0 | 76 | 6,833 |
| | 27 | Brace Flat | 7,394 | 31 | 168 | 7,593 |
| | Totals | | 67,604 | 1,688 | 3,249 | 72,541 |
| 0657 | 4 | Boni Ranch | 94 | 0 | 1,120 | 1,214 |
| | 6 | Brooks Meadow | 16 | 9 | 295 | 320 |
| | 9 | Wilson Field | 118 | 0 | 911 | 1,029 |
| | 11 | Smith Creek | 465 | 0 | 1,007 | 1,472 |
| | 14 | Jack Wilson-Star Meadow | 506 | 0 | 988 | 1,494 |
| | 19 | Castro #1 & 2 | 108 | 0 | 315 | 423 |
| | 21 | Wiseman | 102 | 0 | 569 | 671 |
| | 24 | Brace Ranch | 43 | 0 | 837 | 880 |
| | 25 | Twin Spring | 192 | 317 | 83 | 592 |
| | Totals | | 1,644 | 326 | 6,125 | 8,095 |

2.1 Livestock Grazing Use

The current total permitted use for livestock grazing in Nickel Creek and Nickel Creek FFR allotments is 5,093 AUMs and 109 AUMs, respectively (Table 2). A reduction in active use was imposed in the 1970s, and is shown as suspended use in Table 2.

Table 2. Total permitted use, active permitted use, and suspended use for individual permittees in Nickel Creek and Nickel Creek FFR Allotments (1989 - present).

| Allotment | Permittee | Total Use | Suspended Use | Active Use | Exchange of Use | Total Use | % BLM AUMs |
|------------------|----------------------|-----------|---------------|------------|-----------------|-----------|------------|
| Nickel Creek | Juniper Mountain LLC | 6,612 | 1,519 | 5,093 | 663 | 5,756 | 88 |
| Nickel Creek FFR | Juniper Mountain LLC | 109 | 0 | 109 | 0 | 109 | 100 |

2.2 Nickel Creek Allotment (0548)

Four smaller allotments were combined to form Nickel Creek Allotment. Pastures 1, 2, 3, 5, 7, 8, and 10 were part of the Battleground-Boni Allotment (0548); pastures 13, 16A, 16B, and 17 were part of the Ben Mills Allotment (0549); pastures 18, 20, 22, and 23 were part of the Star Ranch Allotment (0550); and pastures 26A, 26B, and 27 were part of the Sheep Hills Allotment (0551) (Maps 1N, 1S).

For analysis purposes, pastures were combined by similar season of livestock use, as reported in actual use reports, into the following groupings: Early Spring (2, 16A, 16B, 20, 22, 23); Spring Rest Rotation (26A, 26B, 27); Spring/Summer (1, 3, 5, 8, 18); Summer (7, 13, 17); and Fall (10).

2.3 Nickel Creek FFR Allotment (0657)

Little actual livestock use data was submitted to BLM on the Nickel Creek FFR Allotment. Season of use and livestock numbers have been at the discretion of the permittee; however, the amount of use could not exceed 50 percent utilization. Use periods were variable for these pastures and no seasonal breakdowns were used.

2.4 Physical and Administrative

The Nickel Creek and Nickel Creek FFR allotments are located in Owyhee County, Idaho, approximately 30 miles southeast of Jordan Valley, Oregon. Nickel Creek FFR Allotment is contained entirely within the Nickel Creek Allotment. The Nickel Creek Allotment is bordered by the North Fork of the Owyhee River on the north, Deep Creek on the east, Owyhee River on the south, and Juniper Mountain on the west.

Elevations range from 4,600 feet along the Owyhee River breaks to over 5,800 feet on rhyolitic summits. The terrain is undulating to steep. Landforms consist of foothills, structural benches, tablelands, and calderas. Tablelands are primarily of basalt in origin while most of the other landform features are developed in welded rhyolitic tuffs and some breccia.

The allotments lie within the boundary of the Nickel Creek Core Area in the Owyhee Field Office, Lower Snake River District. They include portions of the North Fork Juniper Outstanding Natural Area (ONA)/Area of Critical Environmental Concern (ACEC), Pleasant Valley Table Research Natural Area (RNA)/ACEC, The Badlands RNA/ACEC, and Owyhee River Bighorn Sheep ACEC as designated by the Owyhee Resource Management Plan (RMP). Portions of the North Fork Owyhee River, Upper Deep Creek, and Owyhee River-Deep Creek Wilderness Study Areas (WSA) are also included in the allotments.

2.5 Soils

The majority of the pastures have soils that are shallow to moderately deep and well drained. Soils are clayey to loamy and vary in surface and subsurface rock fragment content. These soils formed in residuum and alluvium derived dominantly from welded rhyolitic tuff. The associated ecological sites consist primarily of the Shallow-Claypan 12-16", Loamy 10-13", and Loamy 13-16" sites.

The potential natural vegetative community for the Shallow-Claypan 12-16" ecological site consists of low sagebrush (*Artemesia arbuscula*), Idaho fescue (*Festuca idahoensis*), and bluebunch wheatgrass (*Pseudoroegneria spicata*). These sites occur where soils are shallow to bedrock or have heavy clay layers in the profile. Where soils are very shallow over bedrock Sandberg bluegrass (*Poa secunda*) dominates the grass species component.

The potential natural vegetative community for the Loamy 10-13" ecological site consists of Wyoming big sagebrush (*A. tridentata wyomingensis*) with bluebunch wheatgrass as the understory dominant. These sites occur where soils are moderately deep and there is mesic soil temperature regime (generally sites below 5,400 feet in elevation).

The potential natural vegetative community for the Loamy 13-16" ecological site consists of mountain big sagebrush (*A. t. vaseyana*) with an understory of Idaho fescue and bluebunch wheatgrass. These sites occur where the soils are moderately deep and there is a frigid soil temperature regime (basically sites above 5,400 feet in elevation).

Certain tablelands in the allotment (i.e., Boni Table) have soils that formed primarily in basalt residuum and alluvium. These soils are shallow to moderately deep and well drained. The ecological site associated with these soils is a Clayey 12-15". Here the potential natural vegetative community consists of low sagebrush (*A. longiloba*), Idaho fescue, and bluebunch wheatgrass.

Small but significant areas of stream and fan terrace soils occur in the allotment. These soils are moderately-deep to deep and formed in recent mixed alluvium. These soils have a Loamy 12-16" ecological site associated with them that is represented by basin big sagebrush (*A. t. tridentata*), Idaho fescue, and bluebunch wheatgrass.

The North Fork Juniper ONA/ACEC and the Pleasant Valley Table RNA/ACEC include the following representative plant communities: silver sagebrush (*A. cana*)/Idaho fescue; silver sagebrush/dry graminoid; low sagebrush (*A. a. arbuscula*)/Idaho fescue; low sagebrush/Sandberg

bluegrass; western juniper (*Juniperus occidentalis*)/low sagebrush/Idaho fescue; Owyhee sagebrush shrubland (*A. papposa*); and California oatgrass (*Danthonia californica*). The Badlands RNA/ACEC includes the following representative plant communities: basin big sagebrush/Idaho fescue; low sagebrush/Idaho fescue; low sagebrush/Sandberg bluegrass; Idaho fescue/California oatgrass; western juniper/low sagebrush/Idaho fescue; western juniper/Idaho fescue; western juniper/bluebunch wheatgrass; and western juniper/mountain big sagebrush/Idaho fescue.

2.6 Riparian

The canyons of Deep Creek and the Owyhee River form the eastern and southern boundaries of the Nickel Creek Allotment, respectively. The North Fork Owyhee River forms a portion of the western boundary of the allotment and flows southwesterly to the Owyhee River. Over 50 miles of stream are located in the allotments that support more than 160 acres of riparian habitat (Table 3). Approximately 30.12 miles of stream are classified as perennial, 5.56 miles are perennial/intermittent, 12.24 miles are intermittent, and 3.76 are ephemeral/intermittent. The majority of the riparian habitat is located along tributary streams to Deep Creek that flow easterly from the foothills of Juniper Mountain (Maps 1N, 1S). These streams include Nickel, Smith, Little Smith, Thomas, Little Thomas, Wilson, Beaver, Trap, Castle, Skunk, Jobe, Current, Corral, Dons, and Stoneman creeks. Additionally, Porcupine Creek, which flows southeasterly to the Owyhee River, supports small areas of riparian habitat.

Table 3. Length of stream segments on public land in different pastures of the Nickel Creek and Nickel Creek FFR allotments, Owyhee County.

| Allotment | Pasture | Stream Name | Length | Stream Flow |
|--------------|---------|-------------------------|--------|------------------------|
| Nickel Creek | 1 | Dons | 1.75 | Intermittent/Perennial |
| | 1 | North Fork Owyhee River | 6.72 | Perennial |
| | 2 | Corral | 1.20 | Intermittent |
| | 2 | Current | 4.11 | Perennial/Intermittent |
| | 2 | Deep | 0.20 | Perennial |
| | 2 | Stoneman | 2.71 | Perennial |
| | 3 | Nickel | 1.92 | Intermittent |
| | 7 | Little Thomas Creek | 1.86 | Perennial/Intermittent |
| | 7 | Smith | 1.80 | Perennial |
| | 7 | Thomas | 1.30 | Perennial/Intermittent |
| | 7 | Wilson | 2.25 | Intermittent |
| | 8 | Hidden Valley | 1.59 | Ephemeral/Intermittent |
| | 8 | Nickel | 6.70 | Perennial |
| | 10 | Little Smith | 1.15 | Perennial/Intermittent |
| | 10 | Smith | 0.94 | Perennial |

| Allotment | Pasture | Stream Name | Length | Stream Flow |
|------------------|---------|-------------|--------|------------------------|
| | 13 | Castle | 1.61 | Perennial/Intermittent |
| | 16B | Castle | 0.35 | Perennial/Intermittent |
| | 16B | Nickel | 0.02 | Perennial |
| | 17 | Jobe | 1.08 | Perennial/Intermittent |
| | 17 | Skunk | 1.51 | Perennial/Intermittent |
| | 18 | Castle | 0.87 | Perennial/Intermittent |
| | 18 | Deep | 0.16 | Perennial |
| | 18 | Long Meadow | 2.17 | Ephemeral/Intermittent |
| | 20 | Beaver | 0.34 | Intermittent |
| | 23 | Beaver | 1.04 | Perennial |
| | 26B | Porcupine | 1.95 | Intermittent |
| | 27 | Porcupine | 2.27 | Intermittent |
| | 27 | Trap | 2.31 | Intermittent |
| | Totals | | 51.88 | |
| Nickel Creek FFR | 6 | Deep | 0.30 | Perennial |
| | 11 | Smith | 0.75 | Perennial |
| | 19 | Castle | 0.25 | Perennial |
| | 21 | Deep | 0.3 | Perennial |
| | Totals | | 1.6 | |

Approximately 50 springs are located in the allotment most of which support small areas of wetland/riparian habitat. Six springs have been developed with water piped to a trough for livestock to drink. Much of the riparian/wetland habitat at developed springs has been excluded from livestock grazing.

2.7 Wildlife and Special Status Animals

2.7.1 Redband Trout

Nickel Creek Allotment

Castle, Current, Deep, Little Smith, Little Thomas, Nickel, Smith, Stoneman, and Thomas creeks, and the North Fork Owyhee River support populations of redband trout. Information on trout abundance in these streams is limited. Current Creek was sampled in pasture 2 in 2001 (2.9 miles upstream from its confluence with Deep Creek). Trout density was low (16 trout/100 m² of stream). Similarly, densities were very low in Deep Creek adjacent to pasture 18 (0 to 1 trout/100 m² of stream) at stream mile 22.8 (Pole Creek confluence) and stream mile 17.5 in 2000. Redband trout abundance was sampled in the North Fork Owyhee River (downstream of

the Nickel Creek allotment) in 1991 and 1997 (Allen et al. 1998), and densities were also very low (≤ 1 fish/100 m²).

Nickel Creek FFR Allotment

Castle, Deep, and Smith creeks support populations of redband trout in the Nickel Creek FFR Allotment. Information on trout abundance in these streams is extremely limited. Densities were very low in Deep Creek adjacent to pasture 21 (0 to 1 trout/100 m² of stream) at stream mile 22.8 (Pole Creek confluence) and stream mile 17.5 in 2000.

2.7.2 Wildlife

These allotments contain habitat for numerous species of wildlife including mule deer, Rocky Mountain elk, pronghorn antelope, mountain lion, bobcat, river otter, badger and a variety of other mammalian predators, sage grouse, chukar, California quail, various raptors, and a large diversity of other nongame birds, small mammals, reptiles, and amphibians.

One federally threatened animal species, the American bald eagle, occasionally winters along the Owyhee River and lower Deep Creek along the southern and eastern boundary of the Nickel Creek Allotment. Two federal candidate species for listing as threatened or endangered and a number of species classified as BLM "Sensitive Species" or State of Idaho "Species of Special Concern" are also known or likely to occur within this allotment. They include 22 avian species, 10 mammal species, two amphibian species, and one fish species (Appendix A).

Inventory and monitoring data are limited or absent for many of these special status species. Therefore, little is known about their distribution, population status or trend within the allotments. Their occurrence within the allotments has been verified through field observation or assumed likely because the allotments fall within the species known range and contain habitat types potentially capable of supporting viable populations of the species. The following is a brief description of surveys and/or monitoring efforts that have been conducted for special status animal species in the allotments.

Sage Grouse lek (breeding ground) - Since the late 1970s, BLM and Idaho Department of Fish and Game biologists periodically conducted lek surveys/counts. Recent aerial surveys that included all or portions of these allotments were conducted in 1994 and 2001 and confirmed the presence of one active lek in the Nickel Creek Allotment and seven others within three miles or less of the allotment boundary. One other lek was discovered in the Nickel Creek Allotment during a 1978 aerial survey but was not found to be active during 2001 survey flights. No inferences can be made concerning trend of sage grouse populations within these allotments since no lek monitoring has been conducted and only one of the leks has been observed more than once during survey efforts.

California Bighorn Sheep - Following the reintroduction of California bighorn sheep in 1963, Idaho Department of Fish and Game (IDFG) and BLM biologists conducted frequent surveys of the Owyhee River Canyon complex. These surveys have generally documented a steady increase in bighorn sheep numbers although numbers have declined somewhat in recent years. They have also documented yearlong or seasonal occupancy by bighorn sheep of most suitable habitats within the Owyhee Canyonlands complex including the Owyhee River, Deep Creek and

adjacent uplands in the Nickel Creek Allotment. Much of the southern and eastern portions of this allotment are within the Owyhee River Bighorn Sheep Habitat Area ACEC.

A three year study of the effects of spring livestock grazing on bighorn sheep habitat use was conducted partially within the Nickel Creek allotment (Taylor 2001). This study documented the presence of important lambing and other bighorn sheep habitat within this allotment. It also determined that spring livestock grazing results in the temporary displacement of bighorn ewes and lambs from accessible portions of their home range. The author recommends minimizing the time cattle are in ewe home ranges, discouraging water developments, fences, salting and other practices that concentrate cattle in or near ewe home ranges and controlling livestock numbers to ensure adequate forage for bighorn sheep.

Spotted Frog and other Herptofauna - Surveys for Columbia spotted frogs and other herptofauna that included most of the wetlands within these allotments were conducted via Challenge Cost Share (CCS) agreements with the BLM by Boise State University in 1993 (Munger et al. 1994), by Boise State University and Idaho State University in 1995 (Munger et al. 1996) and by Boise State University in 1997 (Munger and Barnett 2002). As a result of these surveys and other field work by BLM employees during this same period, Columbia spotted frog populations were discovered within the allotment along portions of Stoneman, Deep, Little Thomas, Thomas, Smith and Castle creeks and at other wetland habitats.

Columbia spotted frog populations and habitat along Stoneman Creek and other sites within the Nickel Creek core area have been monitored since 1993 and will continue to be monitored as described in the Columbia Spotted Frog Great Basin Population (Owyhee Mountains Subpopulation) Long-term Monitoring Plan (Engle 2001). Results of this monitoring indicated a loss of breeding habitat and drastic decline in spotted frog populations along Stoneman Creek resulting primarily from the loss of beaver dams that began deteriorating in 1997 and washed out in 1998. Populations rebounded dramatically in 2002 following the construction of an artificial dam and reintroduction of beaver at the original dam site in the spring of 2002 (unpublished data from 2002 monitoring). Monitoring has also revealed livestock grazing and trampling damage to Stoneman Creek and other spotted frog habitats within the core area.

Bats - The Pacific Northwest Bat Research Team, under a CCS agreement with the Idaho Department of Fish and Game, conducted a survey of bat distribution in juniper woodlands of the Owyhee Mountains in 1996 (Perkins and Peterson 1997). The survey included several sites within and in close proximity to these allotments including Nickel, Deep, and Stoneman creeks and various impoundments and structures. Several special status bat species were discovered including the long-eared myotis, long-legged myotis, western small-footed myotis and Yuma myotis, as well as two other bat species.

Wildlife (general) - Science Application International Corporation (SAIC) conducted an extensive survey for the U.S. Air Force between the fall of 1991 and the summer of 1993 to provide baseline data for the Environmental Impact Statement on the proposed Idaho Training Range (U.S. Air Force 1993). It included much of these allotments. Special status species observed in key habitats either within the allotments or adjacent allotments included bald eagles (winter only), northern goshawk (winter only), ferruginous hawk, peregrine falcon, great egret (migrant), sage grouse, burrowing owl, gray flycatcher, loggerhead shrike, black swift (probable

migrant), black-throated gray warbler, Wilson's warbler, MacGillivray's warbler, yellow warbler, yellow-headed blackbird, sage sparrow, Brewer's sparrow, California bighorn sheep, and spotted bat.

Idaho Fish and Game's Conservation Data Center, under contract with The Nature Conservancy and with funding also contributed by the BLM via a CCS agreement, conducted an inventory and assessment of wetland/riparian and terrestrial vegetation of the 45 Ranch Allotment in 1998 and 1999 (Murphy and Rust 2001). This inventory was conducted entirely within the 45 Allotment, which is in relative close proximity to the Nickel Creek Allotment, and it was conducted within habitat types that are well represented within this allotment. The primary focus of this study was on vegetation but an extensive record of wildlife observations was also maintained during vegetation community surveys. Special status species observed during this study included prairie falcon, ferruginous hawk, northern harrier, sage grouse, gray flycatcher, loggerhead shrike, black-throated gray warbler, yellow warbler, willow flycatcher, Brewer's sparrow, sage sparrow, California bighorn sheep, *Myotis* (bat) species, and spotted bat (heard).

Songbirds - The Golden Eagle Audubon Society, under a CCS agreement with the BLM, conducted a breeding bird study in the spring of 1993 and 1994. It was designed to determine avian use of western juniper woodlands subjected to three management strategies: clearcutting, prescribed burning and no treatment and was conducted within a three mile buffer area along the Mud Flat Road in and adjacent to the Nickel Creek Allotment. A total of 483 observations of 30 bird species were recorded in the untreated old growth/seral juniper stands, while 234 observations of 23 species were recorded in the prescribed burn treatments and 142 observations of 22 species were recorded in the clearcut treatments. Of the special status species recorded during this study, dusky flycatchers and black-throated gray warblers were observed only in untreated stands; calliope hummingbirds were observed only in the prescribed burn and clearcut treatments in equal numbers; green-tailed towhees were observed in both the untreated stands and clearcut treatments in similar numbers; gray flycatchers were observed in all three treatments but were much more abundant in untreated stands and in good numbers in prescribed burn treatments; and Brewer's sparrows were also observed in all three treatments but were most abundant in clearcuts and prescribed burn treatments in that order.

2.8 Special Status Plants

Federally listed plant species are not known to occur in these allotments, although the U.S. Fish and Wildlife Service (USFWS) considers all of Idaho to be within the potential range of Ute ladies'-tresses (*Spiranthes diluvialis*), a federally "threatened" orchid, even though the nearest known population is more than 200 miles from the allotment (USFWS 1998). This species occurs in spring, seep, and stream habitats, which are generally disproportionately impacted by livestock grazing, primarily through trampling and herbivory. Ute ladies'-tresses probably does not occur in these allotments because much of the riparian habitat that occurs here meets the definition of "disqualified habitat" as defined in USFWS (1998). Also, riparian inventories in these allotments, and in Owyhee County in general, have yielded no Ute ladies'-tresses observations.

Mud Flat milkvetch (*Astragalus yoder-williamsii*) is a BLM sensitive species. This plant is restricted to uplands in the upper forks of the Owyhee River area and one disjunct location in

Nevada. It does not occur in Oregon. A large portion of the species' range is in the Nickel Creek allotments and it has been found in pastures 2 (Early Spring Use), 5 (Spring/Summer Use), 7 (Fall Use), and 11 (FFR). This plant occurs on fine loamy soils in low sagebrush and mountain big sagebrush communities.

3.0 Idaho Rangeland Health Standards Evaluation

The conditions of allotments in this assessment were evaluated by how they relate to the standards for rangeland health that were adopted by Idaho BLM in 1997. The conditions of each season of use are discussed relative to the appropriate standards.

3.1 Description of Standards

Standard 1 - Watersheds: *Watersheds provide for the proper infiltration, retention, and release of water appropriate to soil type, vegetation, climate, and landform to provide for proper nutrient cycling, hydrologic cycling and energy flow.*

The standard Matrix for Rangeland Health Evaluation contains indicators in hydrology, soil erosion/deposition, and vegetation. Indicators from all three sections are applicable to this standard. These indicators assess the composition of the vegetation community, its ability to stabilize the soil surface, dissipate raindrop energy and prevent accelerated soil erosion.

Standard 2 – Riparian Areas and Wetlands: *Riparian areas are in properly functioning condition appropriate to soil type, climate, geology, and landform to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

The standard checklist for riparian functioning condition contains indicators in hydrology, soil erosion/deposition, and vegetation. Indicators from the vegetation section are applicable to this standard. These indicators assess the composition of the vegetation community, and its ability to stabilize streambanks, filter sediment, dissipate energy, and revegetate point bars.

Standard 3 - Stream Channel/Floodplain: *Stream channels and floodplains are properly functioning relative to the geomorphology (e.g. gradient, size, shape, roughness, confinement, and sinuosity) and climate to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

The standard checklist for riparian functioning condition contains indicators for hydrology, vegetation, and soil erosion/deposition. Indicators from the hydrologic and soils erosion/deposition sections are applicable to this standard. These indicators assess the structural components and characteristics of the stream channel and floodplain, the stability of the system, and its ability to dissipate energy and transport sediment.

Standard 4 Native Plant Communities: *Healthy, productive, and diverse native animal habitat and populations of native plants are maintained or promoted as appropriate to soil type, climate, and land form to provide for proper nutrient cycling, hydrologic cycling, and energy flow.*

The standard Matrix for Rangeland Health Evaluation contains indicators in hydrology, soil erosion/deposition, and vegetation. Indicators from the vegetation section are applicable to this standard. These indicators assess the composition, productivity, and current successional status of the vegetation community, and its ability to maintain itself, protect the soil, capture energy, and cycle nutrients.

Standard 5 - Seedings: *Rangelands seeded with mixtures, including predominately non-native plants, are functioning to maintain life form diversity, production, native animal habitat, nutrient cycling, energy flow, and the hydrologic cycle.*

This standard does not apply to these allotments.

Standard 6 - Exotic Plant Communities, Other than Seedings: *Exotic plant communities, other than seedings, will meet minimum requirements of soil stability and maintenance of existing native and seeded plants. These communities will be rehabilitated to perennial communities when feasible cost effective methods are developed.*

This standard does not apply to these allotments.

Standard 7 - Water Quality: *Surface and ground water on public lands comply with the Idaho Water Quality Standards.*

All streams in the Nickel Creek Allotment have general use designations for secondary contact recreation, agricultural water supply, wildlife habitat, and aesthetics. State of Idaho, Division of Environmental Quality (DEQ) has assigned the following additional designated uses to the North Fork Owyhee River: domestic water supply, cold water biota, salmonid spawning, primary contact recreation, and special resource water. Castle, Current, Deep, Little Smith, Little Thomas, Nickel, Smith, Stoneman, and Thomas creeks support populations of redband trout. Thus, cold-water biota and salmonid spawning are additional beneficial uses of these streams.

The North Fork Owyhee River, and Castle, Deep, and Nickel creeks are on the State of Idaho's 303(d) list of water quality limited stream segments. Nickel Creek was listed in 1998 by the State of Idaho as water quality limited from its headwaters to Mud Flat road. The other streams were listed in 1998 as water quality impaired for their entire length. DEQ identified bacteria and thermal modification as the primary pollutants in the North Fork Owyhee River. Deep and Castle creeks are listed as water quality impaired because of elevated water temperatures and sediment levels. Nickel Creek is listed because of elevated sediment levels.

DEQ concluded in their "North and Middle Fork Owyhee Subbasin Assessment and Total Maximum Daily Load" that stream temperatures of the North Fork Owyhee River exceed Idaho water quality standards for cold-water biota, salmonid rearing, and salmonid spawning. DEQ required that thermal energy total maximum daily loads (TMDLs) be prepared for the North Fork Owyhee River basin (Hydrologic Unit Code #17040107, Maps 4N, 4S). DEQ predicted that attainment of the cold water biota standard for the North Fork Owyhee River would require a 32-58% reduction in thermal energy; and attainment of the salmonid spawning standard would require an increase in stream shade.

Standard 8 - Threatened and Endangered Plants and Animals: *Habitats are suitable to maintain viable populations of threatened and endangered, sensitive, and other special status species.*

Standard 8 incorporates indicators from hydrology, water quality, and vegetation. Vegetation and hydrology indicators primarily from Standards 2 and 4 are incorporated into this standard. These indicators assess the composition and current successional status of both riparian and upland communities; and their ability to maintain themselves, protect the soil, and provide structural cover and food for dependent wildlife species. In addition, Standard 8 includes an evaluation of the current status of sage grouse habitat within many of these allotments. Losses of sagebrush habitats have been so great in recent years that BLM has recently begun evaluating the quantity and quality of these habitats primarily by focusing on sage grouse whose habitat needs also roughly encompass those of other sagebrush obligate species.

3.2 Methods Used to Evaluate Rangeland Health

3.2.1 Upland Data

Proper Functioning Condition

Standard Checklists, outlined in the 1998 BLM Technical Reference 1737-15, A User Guide to Assessing Proper Functioning Condition and the Supporting Science for Lotic Areas (flowing water), and other available qualitative and quantitative data are used to determine if riparian areas are meeting Rangeland Health Standards. The standard checklist consists of 17 indicators that are used to assess the functioning condition of riparian areas. The indicators are compiled into three interlocking attribute categories representing erosion/deposition, hydrologic function, and vegetative status. Status of noxious weeds is also considered for riparian health.

Spring wetland areas were assessed for proper functioning condition as outlined in Technical Reference 1737-11, "Process for assessing proper functioning condition for lentic riparian-wetland areas" (USDI 1994). Lentic areas are defined as wetland-riparian areas adjacent to standing water habitats such as lakes, ponds, seeps, and meadows.

Rangeland Health Evaluations

Rangeland Health Evaluation Worksheets, outlined in BLM technical reference 1734-6 Interpreting Indicators of Rangeland Health, and other available qualitative and quantitative data are used to determine if rangelands are meeting or making significant progress toward meeting the Standards for Rangeland Health. The rangeland health evaluation summary worksheet consists of 17 indicators, each of which is rated on the degree of departure from the appropriate ecological site description or ecological reference area. Areas without a nearby reference area are evaluated using familiarity of the area and incorporating the best professional judgment of the evaluators. The indicators are compiled into three interlocking attribute categories representing soil/site stability, hydrologic function, and biotic integrity. The preponderance of evidence of each attribute determines the condition of the site.

Trend and Photo Plots

Trend data provides information on changes in the plant community, changes in plant occurrence, vigor and health. Vegetation trend data are collected at permanently located nested

plot frequency transect (NPFT) sites. Frequency and cover data are collected as well as shrub density where applicable. The methodology used to establish and collect data at these sites is described in full detail in BLM technical references 1400-4 and 1730-1. Frequency data illustrates changes in numbers of plants and provides information on reproductive capabilities. Cover data describes the percent of ground covered by plant material, biological soil crusts, gravel, rock, and litter. Photographs are taken at NPFT sites and at other sites permanently marked for photo plots. At NPFT and photo plots sites, a minimum of three photographs are taken, two general views and one of the photo plot itself. The photo plot is sketched out to illustrate sizes and species more clearly and can be correlated with the photograph to document plant vigor and health. Shrub density is recorded in either 1/100th or 1/200th acre plots, depending on the density of shrubs. This information is expressed as plants per acre.

Utilization

Utilization data are important in evaluating the effects of grazing and browsing on specific areas of rangeland. Utilization is generally expressed as a percentage of available forage weight or number of plants, twigs, etc., that have been consumed or destroyed. Utilization is recorded in terms of current year's production removed. Generally, utilization transects are run at pre-determined key use areas (permanent NPFT locations), however utilization may be collected anywhere throughout a pasture or allotment. A number of methods may be used including the Landscape Appearance Method, Key Species Method, or Grazed Class Method (Interagency Technical Reference 1996 BLM/RS/ST-96/004+1730). In general, the utilization data used in this assessment were collected using the Key Species Method.

Special Status Plants

There is limited information about the presence or absence of other special status plants in the allotments primarily due to the large size of the area. The data sources for all special status plant occurrences reported in this document are on file with the CDC (Idaho Fish & Game Conservation Data Center) and were made by BLM or CDC staff. Some occurrences were found incidentally during other work. Other occurrences were found during a plant inventory in portions of the Nickel Creek Allotment area in 1992. The results of that inventory are reported in "Conservation Status of *Astragalus yoder-williamsii* in Idaho" by Moseley and Mancuso of the CDC (1993).

3.2.2 Wildlife Data

Riparian special status species habitats were assessed primarily using information presented in Standard 2. While there is no direct correlation between stream functioning condition and special status species habitat, many of the indicators of riparian functionality are also crucial components of habitat for many of the special status and other wildlife species dependent on this habitat type, especially redband trout and neotropical migratory birds and amphibians. The indicators that assess structure, composition and vigor of hydric (riparian) vegetation are especially important because they also assess the quality and quantity of shade, nesting/breeding habitat, forage and escape cover.

Sage grouse breeding and brood-rearing habitat evaluations were conducted using methodology described in the draft document entitled “A Framework to Assist in Making Sensitive Species Habitat Assessments for BLM-Administered Public Lands in Idaho” (as revised in May, 2001) primarily as a means of evaluating the suitability of the assessment areas as habitat for sage grouse. Although this methodology specifically addresses the habitat requirements of sage grouse, it is also useful in assessing the general health of sagebrush steppe ecosystems and their suitability as habitat for a diversity of other dependent special status species.

The assessment of upland habitats for other special status animal species were conducted primarily using the same data that was used to assess native plant communities under standard 4 including abundance, diversity, vigor, production, cover, utilization, trend and the occurrence of noxious and invasive plants.

3.2.3 Riparian Data

Evaluations of Standard 2 are based on field inventories and examinations of streams and riparian areas conducted in 1996-99, and 2001, and on aerial digital-image data collected on Beaver, Castle, Current, Nickel, Smith, Little Smith, Stoneman, Thomas, and Little Thomas creeks in 1998 and 1999. Field inventories included functioning condition assessments, delineation of the distribution and composition of riparian plant communities, and examination of streambank, channel, and hydrologic conditions. BLM monitoring data collected from 1994 to present were also used to evaluate trend in condition of riparian/aquatic habitats. Locations of sites where trend in riparian habitat condition, riparian plant utilization by livestock, and water quality were monitored are shown on Maps 4N and 4S.

The general condition of riparian/wetland areas at springs were evaluated in 1995-96, from visual estimates of the amount of bare ground present, and levels of livestock impacts such as trampling and pugging of wetland soils, and amount of grazing use of riparian vegetation. If high levels of bare ground and/or livestock impacts were observed, then we concluded the functioning condition of the riparian/wetland area had been negatively impacted.

In 2002, we assessed the functioning condition of about one-half of the spring wetlands in the Nickel Creek Allotment using the BLM’s standard assessment procedure for lentic wetlands.

Evaluations of Standard 3 are based on field inventories and examinations of streams and riparian areas conducted in 1996-99, and 2001, and on aerial digital-image data collected on Beaver, Castle, Current, Nickel, Smith, Little Smith, Thomas, and Little Thomas creeks in 1998 and 1999. Field inventories included functioning condition assessments, delineation of the distribution and composition of riparian plant communities, and examination of streambank, channel, and hydrologic conditions.

3.3 Early Spring Use (Pastures 2, 16A, 16B, 20, 22, 23)

Summary

- pedestalled grasses and bare ground are prevalent in low sagebrush communities and big sagebrush communities in southern pastures;
- 1.9 miles of stream are in proper functioning condition, 5.3 miles are in functioning at risk condition;
- five springs are generally in good condition, two have some livestock impacts;
- livestock use period is generally conducive to maintaining/improving riparian/stream channel conditions;
- upland vegetation has primarily a static trend in condition;
- decreaser grass cover less than expected, juniper cover greater than expected in northern pastures, cheatgrass cover greater than expected in southern pastures;
- approximately 70% of streams not providing suitable redband trout habitat;
- sage grouse breeding and brood-rearing habitat is generally suitable, but limited by juniper encroachment
- Mud Flat milkvetch population in pasture 2 is not impacted by livestock.

3.3.1 Data Collection

Eleven rangeland health evaluations were conducted in low (4) and big (7) sagebrush communities between July 16 and August 14, 2001 (Table 4, Maps 2N, 2S). Four trend plots were conducted in low (2) and big (2) sagebrush communities between 1989 and 1998 (Table 4, Maps 3N, 3S). Three sage grouse breeding habitat evaluations and one brood-rearing habitat evaluation were conducted in 2001 (Table 4, Maps 2N, 2S).

Table 4. Summary of upland data collected in Early Spring Use pastures, Nickel Creek Allotment.

| Pasture | Data Type ¹ | Location | Ecological Site | Condition/Trend ² |
|---------|------------------------|-----------|-----------------------|------------------------------|
| 2 | RHE | 10S03W05 | Loamy 13-16 | - |
| | | 10S03W08 | Loamy Upland 12-16 | + |
| | | 10S03W06 | Loamy 13-16 | 0 |
| | | 09S04W36 | Loamy 13-16 | + |
| | NPFT | 10S03W06 | Loamy 13-16 | Static-Down |
| | SBH | 10S03W07 | Loamy 13-16 | Suitable |
| | SBRH | 10S03W05 | Wet Meadow | Suitable |
| 16A | RHE | 11S03W18A | Shallow Claypan 12-16 | -- |
| | NPFT | 11S03W18 | Shallow Claypan 12-16 | Static |
| | SBH | 11S03W20 | Loamy 10-13 | Marginal |
| 16B | RHE | 11S03W21 | Shallow Claypan 12-16 | 0 |

| Pasture | Data Type ¹ | Location | Ecological Site | Condition/Trend ² |
|---------|------------------------|-----------|-----------------------|------------------------------|
| | | 11S03W27 | Shallow Claypan 12-16 | + |
| | NPFT | 11S03W21 | Shallow Claypan 12-16 | Static |
| | SBH | 11S03W28 | Loamy 13-16 | Marginal |
| 20 | RHE | 12S03W17 | Shallow Claypan 12-16 | 0- |
| 22 | RHE | 12S03W14 | Loamy 11-13 | - |
| 23 | RHE | 12S03W15A | Loamy 11-13 | - |
| | | 12S03W23 | Loamy 10-13 | 0- |
| | NPFT | 12S03W15 | Loamy 11-13 | Static |

¹ RHE – Rangeland Health Assessment, NPFT – Nested Plot Frequency Transect, SBH – Sage Grouse Breeding Habitat Evaluation, SRRH – Sage Grouse Brood-Rearing Habitat Evaluation

² + = none-slight departure from reference conditions, 0 slight-moderate departure from reference conditions, - = moderate departure from reference conditions, -- = moderate-extreme departure from reference conditions

3.3.2 Livestock Use

Use in pastures 2, 16A, and 16B generally occurs from mid-April through May (Appendix B). Pasture 16B received some use into June, July, and August. Prior to 1995, use in pasture 2 occurred in summer or fall. Use was shifted to early spring in an effort to improve riparian conditions on Stoneman Creek. Use in pastures 20, 22, and 23 generally occurs in the first two weeks of April. Between 1986 and 1995, pastures 16A, 16B, and 23 were rested (not grazed) four times and pastures 20 and 22 were rested three times. Pasture 2 was rested in 2001 to allow recovery from a fire in 2000. No use was reported for pasture 23 in 2001; however, no other early spring pastures were rested between 1996 and 2001.

Use in pastures 20, 22, and 23 occurs prior to the critical growth period for all perennial grass species. Use in pasture 2 occurs during the critical growth period for Sandberg bluegrass and prior to the critical growth period for other grasses. Use in pastures 16A and 16B occurs during the critical growth period for bluebunch wheatgrass, needlegrass, squirreltail, and Sandberg bluegrass and prior to the critical growth period for other grasses except when use extends into June and July in pasture 16B.

Total actual use ranged between 287 AUMs in 1991 and 1,877 AUMs in 1987, and averaged 791 AUMs between 1996 and 2001 (Appendix B).

Upland utilization was generally light to moderate between 1976 and 1996 (Appendix O). During 1992, heavy use occurred on Idaho fescue and bluebunch wheatgrass in the eastern portion of pasture 2. Utilization measurements were not performed on Sandberg bluegrass and cheatgrass, the primary forage species in pastures 20, 22, and 23.

Livestock utilization of riparian vegetation was generally light (Table 5). Utilization levels were generally conducive to maintaining and promoting riparian habitat recovery except Castle Creek in 2001 and on Current and Stoneman creeks in 1994 when use levels exceeded that required to maintain/improve vigor, density, and cover of riparian plant communities.

Table 5. Median stubble height and percent shrub utilization for streams in Early Spring Use pastures, Nickel Creek Allotment, 2002.

| Stream | Allotment (Pasture) | Site | Date | Median Stubble Height (inches) | Percent Shrub Utilization |
|----------|---------------------|-----------------------|----------|--------------------------------|---------------------------|
| Beaver | 0548 (23) | 12S03W23 SENW | 10/10/01 | 8.0 | 27% |
| Castle | 0548 (16B) | 11S03W33 NWNE | 10/10/01 | 3.0 | - |
| Current | 0548 (2) | 10S03W08 NWNW | 09/14/00 | estimated to be >4 | - |
| Current | 0548 (2) | 10S03W08 NWNW | 09/10/99 | ~12 | 1.0 |
| Current | 0548 (2) | 10S03W08 NWNW | 10/07/97 | 9.0 | 18 |
| Current | 0548 (2) | Stoneman pasture | 10/09/96 | 5.5 | - |
| Current | 0548 (2) | 10S03W05 SWSW | 10/26/94 | 3.1 | 9.0 |
| Stoneman | 0548 (2) | Lower enclosure fence | 09/14/00 | 5.5 | 32 |
| Stoneman | 0548 (2) | 10S03W07 SENW | 10/07/97 | 6.0 | 0.0 |
| Stoneman | 0548 (2) | 10S03W07 SWNW | 10/26/94 | 2.2 | 83 |

3.3.3 Standard 1: Watersheds

3.3.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in pastures 16B and 20 and a moderate degree of departure for most indicators in pasture 16A. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight-moderate degree of departure from reference conditions in pasture 16B, a moderate degree of departure in pasture 20, and a moderate-extreme degree of departure in pasture 16A. Active pedestalling is apparent in all pastures and most prevalent in pasture 16A. Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a moderate degree of departure from reference conditions in pastures 16B and 20. A high amount of surface gravels are protecting areas from more severe accelerated erosion in pasture 20. The amount of bare ground has a moderate-extreme degree of departure in pasture 16A where large amounts of interspatial areas are devoid of bunchgrasses.

Soil surface indicators have a moderate degree of departure from reference conditions in all pastures. There is a low occurrence of organic matter content in surface layers. The occurrence of physical soil crusting is greater than expected, especially in pastures 16B and 20 where ponding is evident. Weak soil surface structure is evident in pasture 16B. The occurrence of biological soil crusts in appropriate habitats is less than expected in pastures 16A and 20.

Vegetation Cover – The plant community, as it relates to watershed function, has a slight degree of departure from reference conditions in pasture 16B and a slight-moderate degree of departure in pastures 16A and 20. Occurrence of bunchgrasses in interspatial areas is less than expected in

all pastures. There is an imbalance of increaser to decreaser grasses in pastures 16A and 20. Shrub cover is greater than expected in pastures 16B and 20.

NPFT Data

Percent basal cover of increaser grasses was approximately twice that of decreaser grasses in low sagebrush communities between 1991 and 1998 (Table 6). Trend in grass cover was static. Biological soil crusts were a minor ground cover component. Bare ground dominated the sites.

Table 6. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground in low sagebrush communities, Early Spring Use pastures, Nickel Creek Allotment, 1991-1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|-----------------------|-------------------|-------------------|-----------------------|------------------|
| | mean + 95%CI (n) | mean + 95%CI (n) | mean + 95%CI (n) | mean + 95%CI (n) |
| Shallow Claypan 12-16 | 2.4 + 0.7 (4) | 5.1 + 1.1 (4) | 1.3 + 9.5 (2) | 60.8 + 8.7 (4) |

3.3.3.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in pastures 2 and 23 and a moderate degree of departure for most indicators in pasture 22. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – In pasture 2, the amount of surface flow patterns and associated pedestalled plants show a none-slight degree of departure from reference conditions at site 09S04W36, a slight-moderate degree of departure at site 10S03W08, and a moderate degree of departure at the remaining sites. In areas with a moderate departure, there is a preponderance of pedestalled grasses in interspatial areas and some shrubs are also pedestalled. The amount of surface flow patterns and associated pedestalled plants show a moderate degree of departure in pasture 22, and a slight degree of departure in pasture 23. Active pedestalling is apparent in pastures 2 and 22. Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a slight-moderate degree of departure from reference conditions in pasture 2 and moderate degree of departure in pastures 22 and 23. A high amount of surface gravels are protecting areas from more severe accelerated erosion in pasture 2.

Soil surface indicators have a slight-moderate degree of departure from reference conditions in pastures 2 and 22 and a moderate degree of departure in pasture 23. There is a loss of surface horizon material and a presence of physical soil crusts in all pastures and the presence of weak soil structure and physical soil crusting in pasture 23. Biological soil crust cover in appropriate habitats is less than expected in pastures 22 and 23.

Vegetation Cover – The plant community, as it relates to watershed function, has a slight-moderate degree of departure from reference conditions in pastures 2 and 22 and a moderate degree of departure in pasture 23. Site 09S04W36 in pasture 2 most closely resembles reference conditions for diversity and composition. Occurrence of bunchgrasses in interspatial areas is less than expected in pastures 22 and 23. There is an imbalance of increaser to decreaser grasses in pasture 23. Cheatgrass is present in some areas in pastures 2 and 23. Shrub cover is greater than

expected in all pastures. Rabbitbrush cover is greater than expected in pastures 22 and 23. Juniper cover is greater than expected in pasture 2.

NPFT Data

Percent basal cover of decreaser grasses, increaser grasses, and biological soil crusts was similar in big sagebrush communities between 1991 and 1998 (Table 7). Decreaser grass cover increased in pasture 2. Increaser grass cover increased in pasture 23. Bare ground dominated the sites and increased in pasture 23.

Table 7. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground in big sagebrush communities, Early Spring Use pastures, Nickel Creek Allotment, 1989-1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|--------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| | mean \pm 95% CI (n) | mean \pm 95% CI (n) | mean \pm 95% CI (n) | mean \pm 95% CI (n) |
| Loamy 10-13, 13-16 | 2.8 \pm 5.0 (4) | 3.2 \pm 1.8 (4) | 3.1 \pm 30.2 (2) | 45.5 \pm 16.6 (5) |

3.3.4 Standard 2: Riparian Areas and Wetlands

Of 7.2 miles of stream assessed for functioning condition in early spring use pastures, 26% (1.9 miles) are in proper functioning condition and 74% are functioning at risk. Levels of livestock use of riparian plants on streams in these pastures were generally low. Stream segments that are currently not functioning properly are generally in poor condition due to past impacts (i.e. loss of stable beaver dams, or sediment delivery from upstream segments in poor condition) rather than a result of current livestock management. Ten springs are present in early spring pastures, most of which appear to be in good condition. The functioning condition of two spring wetlands may be negatively impacted by livestock use.

Stream Inventories/Assessments

Stoneman and Current creeks in pasture 2 are predominantly in functioning at risk condition (Table 8, Map 4N). Both of these streams (and Current Creek in particular) have been impacted by past high-flow events that either incised the channel (Stoneman Creek) or deposited large amounts of fine sediment and gravel (Current Creek) resulting in unstable channels (see Standard 3). Stoneman Creek also may have been negatively impacted by the failure of inactive beaver dams. Desirable riparian plant species are present on these stream segments, but often not at a great enough density to stabilize banks and channels and dissipate stream energy during high flows (Table 8). Livestock use of riparian vegetation is impacting plant vigor and growth on a portion of Current Creek (segment 002). The upper portions of Current Creek in this pasture (upper half of segment 003 and segment 004) are located in a rocky, confined canyon that prevents excessive sediment deposition and the creation of unstable stream channels. These portions of Current Creek are in proper functioning condition.

Table 8. Riparian Indicators and Functioning Condition Rating by Stream Segment, Early Spring Use pastures, Nickel Creek Allotment, 2002.

| Riparian/Wetland Indicators: | BLM Stream Segment | | | | | | | | |
|---|--------------------|--------------------|-------------------|-------------------|--------------------|--------------------|-------------------|------------------|------------------|
| | Stoneman Cr 001 | Stoneman Cr 002 | Current Cr 001 | Current Cr 002 | Current Cr 003L | Current Cr 003U | Current Cr 004 | Beaver Cr 001 | Castle Cr 002 |
| diverse age class/structure of hydric vegetation (6) | y | y | y | y | y | y | y | y/n | n |
| diverse composition of hydric vegetation (7) | y | y | y | y | y | y | y | y | n |
| vegetation reflects maintenance of soil moisture (8) | y | y | y | y | y | y | y | y | y |
| plant community comprised of bank stabilizing species (9) | y/n | y/n | y/n | y/n | y/n | y | y | y/n | n |
| hydric vegetation exhibits high vigor (10) | y | y/n | n | n | n | y | y | y | y |
| adequate hydric vegetation cover to protect banks and dissipate energy (11) | y/n | n | n | n | n | y | y | y/n | n |
| adequate large woody material (12) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| point bars revegetating with hydric species (14) | y | y | y | y | y | y | y | y | y |
| noxious weeds are not increasing | y | y | y | y | y | y | y | y | y |
| Overall functioning condition* | FAR | FAR | FAR | FAR | FAR | PFC | PFC | FAR | FAR |
| Stream miles | 0.8 | 0.9 | 0.5 | 1.2 | 0.5 | 0.7 | 1.2 | 1.0 | 0.4 |
| Riparian acres | 10.7 | 10.5 | 4.6 | 10.4 | 2.3 | 3.4 | 4.5 | unknown | 4.1 |

(y=yes, n=no, y/n=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

A short segment of Beaver Creek in pasture 20 was not inventoried. Beaver Creek in pasture 23 is in functioning at risk, with an upward trend in condition. Streambanks are becoming vegetated with plant communities capable of withstanding high stream flows. In particular, recruitment and growth of sedges and young willows is contributing to increased bank and channel stability.

Castle Creek in pasture 16B is in functioning at risk condition (Table 8). Streambanks are inadequately vegetated to dissipate stream energy during high flows. Plant communities are not dominated by bank-stabilizing species, as woody shrubs are absent from lower Castle Creek (segment 002). This segment has the potential to grow willows and other shrubs as indicated by the fenceline contrast between pastures 18 (willows present) and 16B (no shrubs).

Corral Creek is a tributary to Current Creek in pasture 2 and was not evaluated for functioning condition, nor was a short segment of Deep Creek located in pasture 2. Nickel Creek is discussed under spring/summer pastures because it is the shared boundary between pastures 16A and 8 (a spring/summer use pasture). Deep Creek is adjacent to the eastern boundary to pasture 16B, but livestock are not known to access the stream from this pasture.

Trend

Additional substrate, bank stability, and bank alteration monitoring was conducted in 1996 and 2000 on Stoneman Creek. Stream channel substrate and floodplain are dominated by fine-grained soils (31% of the stream substrate in 1996 was comprised of fine sediments < 0.1-inch in diameter). In 1996, 41% of a 200-foot transect had vegetated, but unstable streambanks, and 24% of the streambank was unvegetated and unstable. In 2000, 49% of the streambank was altered (soil displaced).

Trend in condition of lower Current Creek was evaluated using photographs taken in 1983, 1988, and 1996 at two different sites within segment 002 (Map 4N). Trend site #5 was located in the upper one-third of segment 002, and trend site #6 was located in the lower one-third of segment 002. Trend in condition of Current Creek was static (Table 9).

Table 9. Long-term trend in riparian habitat condition from photo point monitoring, Early Spring Use pastures, Nickel Creek Allotment, 1983 through 1996

| Stream Segment (length) | Current 002 (1.2 mi) | Current 002 (1.2 mi) |
|----------------------------|----------------------|----------------------|
| Year of First Photo | 1983 | 1983 |
| Year of Last Photo | 1996 | 1996 |
| Photo Point No. | 5 | 7 |
| Bare Soil | 0 | + |
| Channel Width | 0 | 0 |
| Floodplain Width | 0 | 0 |
| Bank Stability | 0 | 0 |
| Downcutting | 0 | 0 |
| Deposition | - | 0 |
| Woody Cover | - | 0 |
| Herbaceous Cover | - | + |
| Vegetation Composition | - | 0 |
| Vegetation Vigor | - | 0 |
| Overall Trend ¹ | 0 | 0 |

¹Trend: no apparent change (0), degradation apparent (-), improvement apparent (+); Magnitude: weak (-, +), moderate (--, ++), strong (---, +++)

Springs

Ten springs are located in pasture 2 (Table 10). No other springs are located on public land in pastures grazed in early spring. No information was available on the condition of riparian/wetland areas at two of the ten springs. Of the other eight springs, riparian/wetland vegetation was present at seven springs, while no riparian vegetation was present at one spring, which was developed and had all its flow diverted into a trough. Of the seven springs with riparian/wetland areas, five spring wetlands appeared to be in good condition with low levels of bare ground (<5%) and slight to low use of riparian vegetation by livestock.

Livestock grazing may be negatively impacting the functioning condition of two springs, as these springs had more extensive areas of bare ground and livestock use of riparian vegetation was moderate.

Table 10. Condition of wetland-riparian areas at springs located in pastures grazed during the early spring, Nickel Creek Allotment, 2002.

| Spring Name | Location | Pasture No. | Amount of Bare Ground | Riparian Vegetation/Impacts from Livestock |
|---------------|---------------|-------------|-----------------------|---|
| Unnamed | 9S04W36 NWSE | 2 | NA | no wetland vegetation present; spring is developed, all water is diverted into a trough |
| Unnamed | 9S04W36 SESW | 2 | 20% | sedges/grass; pugging; moderate use of vegetation by livestock |
| Unnamed | 9S04W36 SWSE | 2 | <10% | aspen/willow/sedges/grasses; moderate use of vegetation by livestock (8/23/95) |
| Unnamed | 10S03W6 SWSE | 2 | <10% | sedges; little use (on 6/25/96) of vegetation by livestock |
| Unnamed | 10S03W5 SWNE | 2 | <5% | sedges/grasses - large wet meadow; little use of vegetation by livestock (8/2/95) |
| Unnamed | 10S03W5 NWSE | 2 | | no information |
| Unnamed | 10S03W5 SENE | 2 | | no information |
| @ Stoneman Cr | 10S03W7 NENW | 2 | none | sedges/rushes/grasses/willow; slight use of vegetation by livestock (on 8/17/95) |
| @ Stoneman Cr | 10S03W7 NWNE | 2 | <5% | willow/rose/sedges/rushes/grasses; no livestock use of vegetation (on 8/17/95) |
| Stoneman | 10S03W12 SESE | 2 | <5% | willow/sedges/grasses; limited livestock access and use; located in narrow/rocky canyon |

3.3.5 Standard 3: Stream Channel/Floodplain

Of 7.2 miles of stream channel located in early spring use pastures, 26% (1.9 miles) are in proper functioning condition and 74% are functioning at risk. Current livestock management is for the most part conducive to maintaining/improving stream channel conditions. Most segments that are in functioning at risk condition resulted from past impacts to channel shape and form.

Stream Inventories/Assessments

Stoneman Creek has an incised channel, however, a new floodplain is developing in areas where the incised channel is wider. Old beaver dam complexes, but no recent signs of beaver activity, were present at the time of the riparian inventory in 1999. Due to channel incision, the sinuosity, width/depth ratio, and gradient of the stream are not in balance with landscape setting (Table 11). Historic channel incisement may have been linked to the loss of beaver dams, in addition to high use of riparian vegetation and alteration of streambanks by livestock prior to 1995.

The downstream-most portion of Current Creek (approximately 2 miles) has a stream channel that is functioning at risk with no apparent trend. This stream is carrying a very high bedload of gravel, which is efficiently moved in the upstream segments on this allotment, but appears to be deposited almost randomly in the lower half of segment 003 and further downstream. Excessive deposition within the channel results in overbank flows, channel migration, and further scouring and deposition (Table 11). Inadequate cobble/boulder and woody vegetation is present to stabilize the channel and floodplain in the unconfined portions of lower Current Creek (segments 001, 002, and lower half of 003).

The stream channel of Castle Creek is wide and shallow relative to the landscape setting. The lack of bank-stabilizing species allows the channel and streambanks to scour and widen during high stream flows. The sinuosity, width/depth ratio, and gradient of Beaver Creek are appropriate relative to the landscape setting. However, the riparian area has not achieved its potential extent, but the trend in cover and density of riparian vegetation is strongly upward. One headcut is present on this segment of Beaver Creek.

Table 11. Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Early Spring Use pastures, Nickel Creek Allotment, 2002.

| Stream Channel/Floodplain Indicators: | BLM Stream Segment | | | | | | | | |
|--|--------------------|-----------------|----------------|----------------|-----------------|-----------------|----------------|---------------|---------------|
| | Stoneman Cr 001 | Stoneman Cr 002 | Current Cr 001 | Current Cr 002 | Current Cr 003L | Current Cr 003U | Current Cr 004 | Beaver Cr 001 | Castle Cr 002 |
| floodplain inundated frequently (1) | y/n | y/n | y | y | y | y | y | y | y |
| beaver dams are active and stable (2) | n | n | NA | NA | NA | NA | NA | NA | NA |
| sinuosity, w/d ratio, gradient in balance with landscape setting (3) | n | n | n | n | n | y | y | y | n |
| riparian area is widening or has achieved potential extent (4) | y | y | y | y | y | y | y | y/n | y |
| upland watershed not contributing to riparian degradation (5) | y | y | y | y | y | y | y | y | y |
| floodplain and channel characteristics dissipate energy (13) | n | y | n | n | n | y | y | y | y |
| lateral stream movement associated with natural sinuosity (15) | y | y | n | n | n | y | y | y | y |
| system is vertically stable (16) | n | y | y | y | y | y | y | y/n | y |
| no excessive erosion or deposition (17) | y | y | n | n | n | y | y | y | y |
| Overall functioning condition* | FAR | FAR | FAR | FAR | FAR | PFC | PFC | FAR | FAR |
| Stream miles | 0.8 | 0.9 | 0.5 | 1.2 | 0.5 | 0.7 | 1.2 | 1.0 | 0.4 |
| Riparian acres | 10.7 | 10.5 | 4.6 | 10.4 | 2.3 | 3.4 | 4.5 | unknown | 4.1 |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.3.6 Standard 4: Native Plant Communities

3.3.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a slight-moderate departure from reference conditions. Decreaser grasses and interspatial plants and biological soil crusts are at lower than expected levels. Surface stone levels were low at three sites and dominated one site (pasture 16B).

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions. Species composition at the surface-stone dominated site (11S03W27) in pasture 16B most closely represents reference conditions. Idaho fescue and bluebunch wheatgrass are common in interspaces. Sites with relatively little surface stone in pastures 16A and 16B have a greater component of Sandberg bluegrass and squirreltail than expected. The decreaser grass component is less than expected. Bluebunch wheatgrass is not present in pasture 16A and is a minor component in pasture 16B. In pasture 20, the Idaho fescue and bluebunch wheatgrass components show a slight departure from reference conditions and are more prevalent than in pastures 16A and 16B. Sandberg bluegrass and low sagebrush occur in greater numbers, a moderate departure from reference areas. Fewer grasses are found in shrub interspaces than expected in communities with little surface stone.

Biological soil crust cover is generally restricted to under shrub canopies. Low levels of cheatgrass are present at all sites and widely scattered western juniper is present in pastures 16B

and 20. Annual production in pasture 16A is only 60-80% of expected because of low bunchgrass productivity. Annual production in pastures 16B and 20 is within 80% of expected; however, shrubs and increaser grass productivity are greater than expected in areas without surface stone. Perennial forb diversity is similar to reference areas for all pastures; however, leguminous species were not observed in pasture 16B.

Plant Vigor - Plant vigor shows a slight-moderate degree of departure from reference conditions. Some crown mortality was observed in decreaser grass species at all sites. Seed heads were present at all sites; however, little or no recruitment was observed. Plant vigor was better in pasture 20 than in pastures 16A and 16B.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a slight-moderate degree of departure from reference areas. Cheatgrass is present in pastures 16A, 16B, and 20 and western juniper is widely scattered in pasture 20.

Trend

The general trend in ecological condition was static in pastures 16A and 16B. Decreaser grass frequencies were generally static and increased frequencies in increaser grasses were not offset by decreases in shrubs. Both sites have low levels of surface stone.

NPFT Studies - Idaho fescue and Sandberg bluegrass frequencies were static at both sites (Appendix G). Squirreltail (*Elymus elymoides*) frequency was static at 11S03W18 and increased at 11S03W21. Frequency of long-leaf phlox was static at both sites (Appendix H). Frequency of low sagebrush was static at both sites; however, frequency was very low at 11S03W18 and no recruitment was observed (Appendix H).

Photo Plots/ View Photos - The apparent trend is static to upward for grasses and generally static for shrubs (Table 12). In the photo plots, increaser grasses increased at both sites and Idaho fescue increased at site 11S03W21.

Shrub Density - Western juniper was not encountered at the trend sites.

Table 12. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, low sagebrush communities, pastures 16A and 16B, Nickel Creek Allotment, 1991-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|----------|-----------------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 11S03W18 | Shallow Claypan 12-16 | 1991-98 | U | S | S | S |
| 11S03W21 | Shallow Claypan 12-16 | 1991-98 | S-U | S-U | S | S-U |

3.3.6.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Big sagebrush communities showed a slight-moderate departure from reference conditions. Perennial grasses, especially decreaser species, are generally less prevalent than expected. Cheatgrass, rabbitbrush, and juniper dominate to varying degrees in different areas.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions in pastures 2 and 22 and a moderate degree of departure in pasture 23. Species diversity is generally good at all sites; however, dominant species are different from reference conditions. Shrubs are a greater component than expected in all pastures. Rabbitbrush is more common than expected at all sites except sites 09S04W36 and 10S03W06 in pasture 2.

Grass and forb composition at sites 10S03W06 and 10S03W08 in pasture 2 most closely resembles reference conditions. However, Sandberg bluegrass cover is greater than expected at 10S03W08, especially in interspaces. Idaho fescue occurs less than expected at sites 09S04W36 and 10S03W05 and Sandberg bluegrass dominates site 09S04W36. Decreasers are primarily found under shrub canopies in these sites. The composition of decreaser grasses in pasture 22 closely represents reference conditions, although Idaho fescue is not present. Bunchgrasses are present in interspaces, but below expected levels. Bunchgrass cover shows a moderate departure from expected in pasture 23. A variety of species are present, but primarily occur under shrub canopies.

Biological soil crust cover is minimal at all sites and restricted to under shrub canopies where present. Cheatgrass is present at all sites in pasture 2 and cover exceeds reference conditions at sites 09S04W36 and 10S03W05. Cheatgrass is scattered to dominant in pastures 22 and 23, a moderate to extreme departure from reference areas. Juniper is present in low numbers at two sites in pasture 2 and dominates the other two sites. Juniper dominated sites are a moderate-extreme departure from reference sites. Juniper is not present in pastures 22 and 23. Annual production is generally within 80% of expected; however, shrubs and juniper provide more productivity than expected in pasture 2 and shrubs and cheatgrass production is greater than expected in pastures 22 and 23. Annual production is between 60-80% at site 12S03W15 in pasture 23. Perennial forb diversity is similar to reference areas for all pastures; however, leguminous species were not observed at sites 09S04W36 and 10S03W05 in pasture 2.

Plant Vigor Plant vigor shows a slight-moderate degree of departure from reference conditions. Plant vigor in pasture 2 was variable. Low vigor and some crown mortality of Thurber's needlegrass were observed at a site with a high surface gravel component (10S03W05). Grasses in shrub understories at the site had better vigor. Low vigor was observed at a site dominated by mountain big sagebrush, western juniper, and Sandberg bluegrass (09S04W36). Grasses at the remaining sites (10S03W06, 10S03W08) had good vigor. Bunchgrasses in a site with relatively lower cheatgrass cover in pasture 22 had good vigor, but vigor was low-moderate at sites with substantial cheatgrass cover in pasture 23. Some mortality of perennial grass crowns and shrubs is present in pasture 23. Seed heads were present at all sites. Evidence of recruitment was greater in pasture 2 than in pastures 22 and 23; however, there is a none-slight departure from reference conditions for plant reproductive capability.

Noxious/Invasive Plants - During 2001, Scotch thistle (*Onopordum acanthium*) was observed in the recently burned area in pasture 2 and a 0.5 acre whitetop (*Cardaria draba*) population was observed adjacent to Star Reservoir in pasture 16A. Invasive species occurrence is a moderate to extreme departure from reference conditions in pastures 22, 23, and portions of 2. Invasive species occurrence is a slight-moderate departure from reference sites in better condition sites in pasture 2 (10S03W06, 10S03W08). Western juniper and rabbitbrush are the primary native invasive species in pasture 2 and rabbitbrush is the primary native invasive species in pastures 22 and 23. Cheatgrass is present at all sites and dominates the understory in portions of pasture 23.

Trend

The general trend in ecological condition was static to downward in pasture 2 (10S03W06). Some decreaser grass species were declining while shrub and juniper cover increased. The general trend in ecological condition was static in pasture 23 (12S03W15). Perennial grasses appeared to be colonizing cheatgrass dominated areas; however, some decreaser grasses declined (not significantly) in frequency. Shrub frequency also declined, but shrub cover appeared to increase.

NPFT Studies - Frequencies of Idaho fescue and prairie junegrass were downward at site 10S03W06 between 1989 and 1998 (Appendix G). Frequencies of other perennial grasses were static. Frequency of bluebunch wheatgrass fluctuated, but increased somewhat between 1984 and 1998 at site 12S03W15. Frequencies of Indian ricegrass and squirreltail decreased, but not significantly. Frequency of Sandberg bluegrass increased.

Frequencies of long-leaf phlox and sagebrush were static at both sites between 1989 and 1998 (10S03W06) and between 1984 and 1998 (12S03W15) (Appendix H).

Photo Plots/ View Photos - The apparent trend was static to downward for grasses and static to upward for shrubs in pasture 2 (Table 13). An increase in western juniper cover was apparent in adjacent upland areas. The apparent trend was static to upward for both perennial grasses and shrubs in pasture 23. Cheatgrass dominated areas decreased as perennial grasses and shrubs (sagebrush, rabbitbrush) became established.

Table 13. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, big sagebrush communities, Early Spring Use pastures, Nickel Creek Allotment, 1984-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|----------|-------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 10S03W06 | Loamy 13-16 | 1989-98 | D | S-D | S-U | U |
| 12S03W15 | Loamy 11-13 | 1984-98 | S-U | U | S-U | U |

Shrub Density - Western juniper was encountered at 10S03W06, but not in shrub density counts. Western juniper was not encountered at 12S03W15.

3.3.6.3 Herbaceous (Burned) Communities

Approximately 641 acres in the eastern portion of pasture 2 burned in 2000. Perennial grass cover and diversity appear to be recovering in areas where western juniper densities were low.

Shrub recruitment is also evident. Some noxious and invasive species including Scotch thistle and cheatgrass are present. No Rangeland Health Evaluation Summary Worksheets were completed for burned communities, and none have trend studies.

3.3.7 Standard 8: Threatened and Endangered Plants and Animals

3.3.7.1 Redband Trout

Redband trout inhabit Stoneman and Current creeks in pasture 2, and Castle Creek in pasture 16B. Of 6.2 miles of stream inhabited by redband trout in these pastures, 4.3 miles are functioning at risk and as a result are not providing suitable habitat to maintain viable trout populations.

Habitat conditions are poor because riparian plant communities on these streams lack late-seral plant species necessary to maintain stable streambanks and channels. Width/depth ratios are not in balance with surrounding landscapes, and floodplain and channel characteristics are inadequate for dissipating energy of high flows. Unstable streambanks and channels reduced the living space for redband trout. The large width/depth ratios of the channels, and lack of streamside vegetation increased solar heating of the streams such that temperatures exceeded state criteria for cold-water biota in Castle and Current creeks.

Livestock grazing is a significant factor affecting cover, vigor, density, and composition of streamside vegetation on Castle Creek. Stream segments of Stoneman and Current creeks that are currently providing unsuitable trout habitat are in poor condition due to past impacts (i.e. loss of stable beaver dams, or sediment delivery from upstream segments in poor condition) rather than a result of current livestock management. The upper 1.9 miles of Current Creek in pasture 2 is in proper functioning condition, has a well-developed canopy of riparian shrubs, and is likely providing suitable habitat for redband trout.

3.3.7.2 Wildlife

Riparian Habitat

Within the early spring use pastures, approximately 31 percent (1.9 miles) of the 6.2 miles of stream riparian habitat are functioning properly while 69 percent (4.3 miles) are functioning-at-risk. Within most of the inventoried stream reaches in these pastures, there is a diverse structure and composition of hydric vegetation, although vigor is at least partially lacking in the majority of these reaches. However, utilization monitoring over the last several years indicates that livestock use levels are generally conducive to improving riparian habitat conditions.

Ten springs also occur on public land in these pastures and all are located in pasture 2. Of the eight springs for which any information is available, livestock grazing may be adversely affecting three of them. Increased bare ground and moderate vegetation utilization occur at two springs and no riparian vegetation is present where a spring is diverted into a trough. The loss of riparian vegetation at the one spring has resulted in complete loss of habitat for dependant animal species while there has been a moderate impact on cover and some physical disturbance of habitats and populations at the two other affected springs. Impacts at the five remaining springs

appear to be minimal and these are likely providing adequate habitat for dependent special status and other species.

Other Pertinent Riparian Information - While early spring grazing of riparian habitats has been shown to be more conducive to improvement of desirable streambank vegetation it also reduces cover and/or food for a diversity of dependent animal species including sage grouse, nesting neotropical migrants, amphibians, and others. It also results in physical disturbance of breeding habitats and populations that can include trampling of nests, more frequent flushing of nesting birds that exposes eggs and nestlings to increased predation and parasitism, and trampling of spotted frog breeding habitat leading to possible destruction of eggs and/or pools (Ammon and Stacey 1997, Bock et al. 1993, Munger et al. 1996, Reaser 1996).

Sage Grouse Habitat Evaluations

Breeding Habitat - One breeding habitat evaluation was conducted in pasture 2 near the base of Nickel Creek Table north of the Mud Flat Road at 10S03W07. Four indicators are in the “suitable habitat” category and three are in the upper end of the “marginal habitat” category (Table 14). The assessment site is in a mountain big sagebrush/Idaho fescue community with Sandberg bluegrass very abundant and young western juniper, squirreltail, and bluebunch wheatgrass scattered throughout. Vigor and production of decreaser grasses and perennial forbs is good. This site was given an overall rating of “suitable habitat”; however, western juniper and/or low sagebrush communities that are classified as unsuitable or marginally suitable breeding habitat dominate much of the pasture.

Table 14. Sage Grouse Breeding Habitat Suitability, 10S03W07 (A) in pasture 2, 11S03W20 (B) in pasture 16A, and 11S03W28 (C) in pasture 16B, Nickel Creek Allotment, 2001.

| Habitat Indicator | Suitable Habitat | Marginal Habitat | Unsuitable Habitat |
|--|------------------|------------------|--------------------|
| Average Sagebrush Canopy Cover | | A, B, C | |
| Average Sagebrush Height | B | A, C | |
| Sagebrush Growth Form | A, B, C | | |
| Average Grass and Forb Height | A, B, C | | |
| Average Perennial Grass Canopy Cover | A, C | | B |
| Average Forb Canopy Cover | B, C | A | |
| Preferred Forb Abundance and Diversity | A, B, C | | |
| Overall Site Evaluation | A | B, C | |

One breeding habitat evaluation was conducted in pasture 16A on Star Ranch Table in the southeast corner of the pasture at 11S03W20. Five habitat indicators are in the “suitable habitat” category, one is in the “marginal habitat” category, and one is in the “unsuitable habitat” category (Table 14). The assessment site is in a Wyoming big sagebrush/squirreltail/Sandberg bluegrass community with no other perennial grasses observed. Most of the pasture is dominated by low sagebrush with this being the only big sagebrush site large enough to run a transect. Abundance and diversity of perennial forbs is good. This site was given an overall rating of “marginal habitat” due to the lack perennial grass cover and the small amount of big sagebrush nesting habitat available in this pasture.

One breeding habitat evaluation was conducted in pasture 16B at 11S03W28. Five habitat indicators are in the “suitable habitat” category and two indicators are in the “marginal habitat” category (Table 14). This evaluation was conducted at the extreme western edge of Castro Table and the pasture in an isolated big sagebrush/bluebunch wheatgrass/Idaho fescue community. Decreaser bunchgrasses are vigorous with lots of residual growth remaining and diversity and abundance of desirable forbs was good. This site was given an overall rating of “marginal habitat” mostly because of the very limited availability of potentially suitable big sagebrush nesting habitat in the pasture and landscape dominated by low sagebrush.

Brood-Rearing Habitat - One late brood-rearing habitat assessment was conducted in pasture 2 at 10S03W05. Three habitat indicators are in the suitable habitat category and one indicator is in the “marginal habitat” category (Table 15). The evaluation was conducted in a semi-wet meadow site just north of the Mud Flat Road that contains a diverse and abundant forb component and no evidence of recent grazing. Although there is some minor erosion occurring along the drainage banks, this site was given an overall rating of “suitable habitat”.

Table 15. Sage Grouse Late Brood-Rearing Habitat Suitability, 10S03W05, Pasture 2, Nickel Creek Allotment, 2001.

| Habitat Indicator | Suitable Habitat | Marginal Habitat | Unsuitable Habitat |
|---|------------------|------------------|--------------------|
| Riparian and wet meadow plant community | X | | |
| Riparian and wet meadow stability | | X | |
| Forb availability | X | | |
| Proximity of sagebrush cover | X | | |
| Overall Riparian/Wet Meadow Site Evaluation | X | | |

General Upland Habitat Assessment

The higher than expected occurrence of sagebrush in all pastures, while possibly limiting herbaceous production to some extent, is providing good woody cover, structure, and forage for a diversity of neotropical migratory birds, sage grouse, and others.

Perennial forbs, a key forage component of sage grouse during the spring, summer, and early fall, are similar to reference areas and expected to be adequate, at least in terms of diversity, to provide for the needs of sage grouse and other special status species.

The perennial grass component in pastures 20 and 22 approximates reference sites and should be adequate to provide for the habitat requirements of most dependent special status animal species. However, in pastures 2, 16A, 16B, and 23 the less than expected occurrence and limited production (in some areas) of decreaser bunchgrasses, especially in the shrub interspaces, is limiting cover for ground nesting and foraging species such as sage grouse, northern harriers, some neotropical migratory birds, and others.

Western juniper is dominant in portions of pasture 2 and widely scattered in pasture 20. While this species provides important habitat for a diversity of neotropical migratory birds, bats and other species, its encroachment into sagebrush communities results in a gradual decline in habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush obligates.

Other Pertinent Information - Early spring grazing in these pastures reduces herbaceous vegetation height and cover for sage grouse, northern harriers, and some neotropical migratory birds as well as forage and cover for a diversity of other species that are prey for special status raptors. It also results in some direct habitat and population disturbance that may adversely affect nesting and brood-rearing success by trampling of nests and causing increased flushing that can leave eggs and young more susceptible to predation and exposure to the elements.

3.3.7.3 Plants

During 2002, BLM visited the Mud Flat milkvetch occurrence in pasture 2 to assess its health and viability. The occurrence has several thousand plants with good vigor. Livestock use was having no observable impact and salt and water developments were not found in the vicinity of any plants. It is likely that more Mud Flat milkvetch occurs in this pasture and adjacent areas.

3.4 Spring Rest Rotation Use (Pastures 26A, 26B, 27)

Summary

- pedestalled grasses are prevalent, gravel/rocks protect low sagebrush communities, but interspaces in big sagebrush communities are at risk;
- 0.75 miles of stream are in proper functioning condition, 0.25 miles are in functioning at risk condition;
- 50% of springs are functioning at risk;
- upland vegetation has primarily a static trend in condition in pasture 26B and a static to downward condition in pastures 26A and 27;
- low sagebrush communities have a limited departure from reference conditions, increase grasses dominate big sagebrush communities where interspatial cover is reduced and the majority of production is from shrubs;
- sage grouse breeding and brood-rearing habitat is generally marginal due to lack of perennial grass cover and reduced forb numbers and vigor.

3.4.1 Data Collection

Thirteen rangeland health evaluations were conducted in low (6) and big (7) sagebrush communities between July 16 and 17, 2001 (Table 16, Map 2S). Six trend plots were conducted in low (2) and big (4) sagebrush communities between 1989 and 1998 (Table 16, Map 3S). Five sage grouse breeding habitat evaluations and two sage grouse brood-rearing habitat evaluations were conducted in 2001 (Table 16, Map 2S).

Table 16. Summary of upland data collected in Spring Rest/Rotation Use pastures, Nickel Creek Allotment.

| Pasture | Data Type ¹ | Location | Ecological Site | Condition/Trend ² |
|---------|------------------------|-----------|-----------------------|------------------------------|
| 26A | RHE | 12S03W24 | Shallow Claypan 11-13 | 0 |
| | | 12S03W35A | Loamy 11-13 | 0- |
| | | 13S03W01A | Shallow Claypan 11-13 | 0 |
| | | 13S03W01B | Shallow Claypan 11-13 | + |
| | NPFT | 13S03W01 | Shallow Claypan 11-13 | Down |

| Pasture | Data Type ¹ | Location | Ecological Site | Condition/Trend ² |
|---------|------------------------|-----------|-----------------------|------------------------------|
| 26B | SBH | 12S02W31 | Loamy 10-13 | Suitable |
| | | 13S03W03 | Loamy 11-13 | Marginal |
| | RHE | 13S02W07 | Shallow Claypan 12-16 | 0- |
| | | 13S03W22A | Loamy 11-13 | - |
| | | 13S03W22B | Shallow Claypan 12-16 | 0- |
| | | 13S03W23 | Shallow Claypan 12-16 | 0- |
| | NPFT | 13S03W22 | Shallow Claypan 12-16 | Static |
| | | 13S03W28 | Loamy 10-13 | Static |
| | SBH | 13S03W11 | Loamy 11-13 | Marginal |
| | | 13S03W22 | Loamy 10-13 | Marginal |
| | SBRH | 13S03W23 | Riparian | Marginal |
| 27 | RHE | 12S03W26 | Loamy 7-10 | 0- |
| | | 12S03W28 | Loamy 11-13 | 0- |
| | | 12S03W29 | Loamy 11-13 | - |
| | | 12S03W35B | Loamy 11-13 | - |
| | | 13S03W04 | Loamy 11-13 | - |
| | NPFT | 12S03W26 | Loamy 11-13 | Static |
| | | 12S03W29B | Loamy 11-13 | Down |
| | | 13S03W04 | Loamy 11-13 | Down |
| | SBH | 12S03W34 | Loamy 10-13 | Marginal |
| | SBRH | 12S03W31 | Riparian | Suitable |

¹ RHE – Rangeland Health Assessment, NPFT – Nested Plot Frequency Transect, SBH – Sage Grouse Breeding Habitat Evaluation, SRRH – Sage Grouse Brood-Rearing Habitat Evaluation

² + = none-slight departure from reference conditions, 0 slight-moderate departure from reference conditions, - = moderate departure from reference conditions, -- = moderate-extreme departure from reference conditions

3.4.2 Livestock Use

Use in pastures 26A and 26B generally occurs from mid-April through mid- to late-May (Appendix C). Livestock are moved from pastures 26A and 26B to pasture 27 where use occurs through June and into July or August. Prior to 1994, use in pasture 27 occurred from mid-April through June. The three pastures were used in a rest rotation system between 1989 and 1994. Pasture 27 has not been rested since 1994; however, pastures 26A and 26B were rested in alternate years since 1995. Pasture 27 was rested in 1987 and 1988 to allow recovery from a 1986 fire.

Use in pastures 26A and 26 B generally occurs before the critical growth period of most grasses except Sandberg bluegrass. Late-May use coincides with the critical growth periods of bluebunch wheatgrass, Indian ricegrass, needlegrass, and squirreltail. Use in pasture 27 occurs during the critical growth period of all perennial grass species except Sandberg bluegrass.

Total actual use ranged between 332 AUMs in 1991 and 1,641 AUMs in 1987, and averaged 1,040 AUMs between 1996 and 2001 (Appendix C).

Upland utilization of perennial grasses was generally light to moderate between 1976 and 1997 (Appendix P). Utilization of bluebunch wheatgrass (moderate) and needlegrass (moderate to heavy) was generally greater than on Idaho fescue, squirreltail, and Indian ricegrass (slight to moderate). Livestock distribution was generally good; however, drainage bottoms in pasture

26A and areas adjacent to water sources in all pastures received consistently greater use than steeper sites and areas farther from water. Use fluctuated between years, but a low sage site in pasture 26B (12S03W22) received consistently heavy use.

A portion of The Badlands RNA/ACEC is in pasture 27. There is no current data on the status of this RNA/ACEC.

3.4.3 Standard 1: Watersheds

3.4.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in pastures 26A and 26B. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a moderate degree of departure from reference conditions in pasture 26A where pedestalling is most prevalent on Sandberg bluegrass in interspatial areas. The amount of surface flow patterns and associated pedestalled plants show a moderate-extreme degree of departure in pasture 26B. Long, deep, connected surface flow patterns and pedestalled bluegrass plants in interspaces are prevalent. Active pedestalling is apparent in both pastures although much can be attributed to older erosional episodes.

Soil Surface - The amount of bare ground has a none-slight degree of departure from reference conditions in both pastures. A high amount of surface gravels are protecting areas from more severe accelerated erosion.

Soil surface indicators have a slight-moderate degree of departure from reference conditions in pasture 26A and a moderate-extreme departure in pasture 26B. There is a loss of surface horizon materials in interspatial areas. The occurrence of physical soil crusting is greater than expected in pasture 26A. The occurrence of biological soil crusts in appropriate habitats is less than expected.

Vegetation Cover – The plant community, as it relates to watershed function, has a slight-moderate degree of departure from reference conditions. Occurrence of bunchgrasses in interspatial areas is less than expected in pasture 26A. There is an imbalance of increaser to decreaser grasses in pasture 26A. Shrub cover is greater than expected.

NPFT Data

Percent basal cover of increaser grasses was greater than that of decreaser grasses in low sagebrush communities between 1991 and 1998 (Table 17). Increaser grass cover increased in pasture 26B. Biological soil crust cover was greater than in any other season of use. Bare ground cover was relatively low because of the presence of gravel and stone cover.

Table 17. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, low sagebrush communities, Spring Rest Rotation Use pastures, Nickel Creek Allotment, 1989 -1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|-----------------------|----------------------|----------------------|-----------------------|----------------------|
| | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) |
| Shallow Claypan 11-13 | 1.5 \pm 1.4 (4) | 2.8 \pm 3.4 (4) | 6.3 \pm 79.4 (2) | 25.9 \pm 22.3 (4) |

3.4.3.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in pastures 26A and 27 and a moderate degree of departure for most indicators in pasture 26B. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight-moderate degree of departure in pastures 26A and 27 and a moderate degree of departure in pasture 26B. In pasture 26B, pedestals occur on mixed species including shrubs, roots are exposed, and some terracettes are forming on steeper slopes. Active pedestalling is apparent in pasture 26B and to a limited degree in pastures 26A and 27. Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a none-slight degree of departure from reference conditions in pasture 26A and moderate degree of departure in pastures 26B and 27.

Soil surface indicators have a slight-moderate degree of departure from reference conditions in pastures 26A and 26B. In pasture 26A, there are areas with recent mechanical soil disturbance (trampling) that is well above the expected rate. Soil surface indicators have a moderate degree of departure from reference conditions in pasture 27. There is a loss of surface horizon material and the presence of weak soil structure in all pastures. Physical soil crusting is present in all pastures and ponding in interspatial areas is evident in pastures 26B and 27. The occurrence of biological soil crusts in appropriate habitats is less than expected in pastures 26B and 27. Some areas in pasture 26A have good biological soil crust cover.

Vegetation Cover – The plant community, as it relates to watershed function, has a slight-moderate degree of departure from reference conditions in pastures 26A and 26B and a moderate degree of departure in pasture 27. Occurrence of bunchgrasses in interspatial areas is less than expected in all pastures. There is an imbalance of increaser to decreaser grasses in pasture 27. Cheatgrass is common at sites 12S03W28 and 12S03W29 in pasture 27 and scattered in remaining areas. Shrub cover, especially rabbitbrush, is greater than expected in pastures 26B and 27.

NPFT Data

Percent basal cover of increaser grasses and biological soil crusts was similar in big sagebrush communities between 1991 and 1998 (Table 18). Decreaser grass cover was a minor component. Decreaser grass cover decreased and increaser grass cover increased at site 13S03W04 in pasture 27 between 1991 and 1998. Bare ground dominated the sites.

Table 18. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, big sagebrush communities, Spring Rest Rotation Use pastures, Nickel Creek Allotment, 1989 -1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|--------------------|----------------------|----------------------|-----------------------|----------------------|
| | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) |
| Loamy 10-13, 11-13 | 1.5 \pm 1.4 (8) | 4.2 \pm 1.3 (8) | 4.3 \pm 5.7 (4) | 53.1 \pm 13.3 (8) |

3.4.4 Standard 2: Riparian Areas and Wetlands

Limited riparian habitat is present in pastures grazed in spring under a rest-rotation system. Of one mile of stream assessed in these pastures, 75% (0.75 mile) is in proper functioning condition and 25% (0.25 mile) is functioning at risk. Livestock rely on Trap Creek in the vicinity of Kettle Spring for water, resulting in excessive bank alteration and high levels of use of herbaceous riparian vegetation on the 0.25 mile of stream that was evaluated. Early season grazing in combination with rest-rotation grazing is generally conducive to maintaining streams in proper functioning condition.

Six springs are located in these pastures and support areas of riparian/wetland vegetation at five of the springs. One spring had no wetland vegetation as all its flow was diverted into a trough. During a rest year (1995) most of the wetlands at the springs had low levels of bare ground. However, two of three springs re-inventoried in 2002 are in functioning at risk condition with 15% bare ground present.

Stream Inventories/Assessments

About 4 miles of Porcupine Creek are located in pastures 26B and 27. The lower 0.75-mile section of Porcupine Creek in pasture 26B was assessed and is in proper functioning condition. Two miles of Trap Creek are located in pasture 27. Trap Creek has intermittent stream flows in the vicinity of Kettle Spring and is in functioning at risk condition (Table 19). Streambanks are inadequately vegetated to resist the erosive forces of high stream flows and riparian vegetation exhibits low vigor.

Cherry Gulch is located in pasture 26B and likely only has ephemeral stream flows and was not assessed for functioning condition.

The canyons of Deep Creek and the Owyhee River form portions of the boundaries to these pastures, but livestock grazing is not authorized on these streams in these pastures. Livestock can access the Owyhee River from pasture 26B via the pack trail at Rickards crossing (Section 27 in 13S, 03W), but under the current season of use they do not travel to/graze on the river.

Livestock can access Deep Creek from a pack trail located in the center of section 7 (13S, 02W) at the southern boundary of pasture 26A and possibly access Deep Creek adjacent to Beaver Creek and the drainage from Deep Creek spring in pastures 26A and 27 (Section 24 in 12S, 03W). Levels of livestock use of riparian areas located on Deep Creek at these access points is unknown.

Table 19. Riparian Indicators and overall Functioning Condition Rating by Stream Segment, Spring Rest Rotation Use pastures, Nickel Creek Allotment, 2002.

| Riparian/Wetland Indicators: | BLM Stream Segment | |
|---|---------------------|--------------------|
| | Porcupine Cr 001 | Trap Cr 12S3W31 |
| diverse age class/structure of hydric vegetation (6) | y | y |
| diverse composition of hydric vegetation (7) | y | y |
| vegetation reflects maintenance of soil moisture (8) | y | y |
| plant community comprised of bank stabilizing species (9) | NA - bedrock | y |
| hydric vegetation exhibits high vigor (10) | y | n |
| adequate hydric vegetation cover to protect banks and dissipate energy (11) | NA - bedrock | n |
| adequate large woody material (12) | NA | NA |
| point bars revegetating with hydric species (14) | y | y |
| noxious weeds are not increasing | y | y |
| Overall functioning condition* | PFC | FAR |
| Stream miles | 0.75 | 0.25 |
| Riparian acres | unknown | unknown |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Springs

Six springs are located in the spring rest-rotation pastures. Riparian/wetland vegetation is present at five springs, while no riparian vegetation was present at one spring, which was developed and had all its flow diverted into a trough. Of the five springs with riparian/wetland areas, all appeared to be in good condition in 1995 with low levels of bare ground (<10%) and low use of riparian vegetation and/or good regrowth after grazing by livestock (Table 20). In 2002, BLM re-inventoried three of these springs, and one is in proper functioning condition and two are functioning at risk with about 15% bare ground present. The wetland that is in proper functioning condition was fenced to exclude livestock use.

Table 20. Condition of wetland-riparian areas at springs located in pastures grazed during the spring under a rest-rotation schedule, Nickel Creek Allotment, 2002.

| Spring Name | Location | Pasture No. | Percent Bare Ground | Functioning Condition ^a | Riparian Vegetation/Impacts from Livestock |
|-------------|------------------|-------------|---------------------------|------------------------------------|---|
| Deep Cr | 12S03W25 NWNW | 26A | <5 - 1995 15-25 - 2002 | FAR | sedges/rushes/grasses/young willows; no livestock use of riparian vegetation on 7/27/95; 25-50% utilization in 2002, active headcuts, unstable banks/channel |
| Sheep | 13S03W02 NWNE | 26A | <10 | - | sedges/grasses; no livestock use of riparian vegetation on 7/27/95 |
| Antelope | 13S03W01 SWSE | 26A | <10 | - | cattails/sedges/grasses/clover; no livestock use of riparian vegetation on 7/27/95 |
| Unnamed | 13S03W12 NENW | 26A | 0 | - | upland grasses; developed spring with all flow diverted into a trough; no wetland plants present |
| Ryegrass | 13S03W21 SESW | 26B | 0 - 1995 <5 - 2002 | PFC | sedges/rushes/rose; developed spring - wetland area fenced to exclude livestock, trough located outside of wetland, overflow returned to wetland, scotch thistle present in wetland |

| Spring Name | Location | Pasture No. | Percent Bare Ground | Functioning Condition ^a | Riparian Vegetation/Impacts from Livestock |
|-------------|---------------|-------------|-------------------------|------------------------------------|---|
| Kettle | 12S03W31 SWNE | 27 | 0 - 1995 5-15 - 2002 | FAR | sedges/willows; no livestock use of riparian vegetation on 5/29/95; 5-25% use in 2002, 15-35% of area with pugging, bank-shearing |

^aFrom 2002 assessment: FAR = Functioning at risk, PFC = Proper Functioning Condition, - = not assessed.

Trend

No trend monitoring was conducted on Porcupine or Trap creeks.

3.4.5 Standard 3: Stream Channel/Floodplain

One mile of stream channel was assessed in spring rest-rotation pastures. The lower 0.75-mile segment of Porcupine Creek in pasture 26B is bedrock lined and functioning properly. Stream channel and floodplain stability of Trap Creek in the vicinity of Kettle spring (0.25 mile of stream) is functioning at risk due to high levels of physical bank alteration.

Stream Inventories/Assessments

The lower 0.75-mile segment of Porcupine Creek in pasture 26B has a bedrock-lined stream channel and is properly functioning (Table 21). Trap Creek is functioning at risk in pasture 27 in the vicinity of Kettle Springs. The stream channel is over-widened and shallow relative to that expected for the landscape setting and the riparian area is not widening, nor has it achieved its potential extent (Table 21). Active headcuts are also present on Trap Creek.

Table 21 . Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Spring Rest Rotation Use pastures, Nickel Creek Allotment, 2002.

| Stream Channel/Floodplain Indicators: | BLM Stream Segment | |
|--|--------------------|------------------|
| | Porcupine Cr 001 | Trap Cr 12S03W31 |
| floodplain inundated frequently (1) | y | y |
| beaver dams are active and stable (2) | y | NA |
| sinuosity, w/d ratio, gradient in balance with landscape setting (3) | y | n |
| riparian area is widening or has achieved potential extent (4) | y | y/n |
| upland watershed not contributing to riparian degradation (5) | y | y |
| floodplain and channel characteristics dissipate energy (13) | y | n |
| lateral stream movement associated with natural sinuosity (15) | y | NA |
| system is vertically stable (16) | y | n |
| no excessive erosion or deposition (17) | y | n |
| Overall functioning condition* | PFC | FAR |
| Stream miles | 0.75 | 0.25 |
| Riparian acres | unknown | unknown |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.4.6 Standard 4: Native Plant Communities

3.4.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a slight-moderate departure from reference conditions. Decreaser grass cover is similar to reference conditions; however, the balance of decreasers to increasers and grasses to shrubs is moving away from reference conditions at some sites. Gravel cover (and to a lesser degree rock cover) dominated all sites except site 13S03W23 in pasture 26B.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions. Decreaser grasses are the primary grass component at all sites except site 12S03W24 in pasture 26A. Sandberg bluegrass occurrence is greater than expected at site 12S03W24 and decreaser grasses occur primarily under shrubs. Sandberg bluegrass cover is increasing, especially in interspaces, and Idaho fescue occurrence is lower than expected at site 13S03W01A in pasture 26A. Low sagebrush abundance is greater than expected at site 12S03W24 in pasture 26A and sites 13S03W12 and 13S03W22B in pasture 26B.

Biological soil crust cover is similar to reference areas at sites 12S03W24 and 13S03W01B in pasture 26A and site 13S02W07 in pasture 26B. Biological soil crust cover is less than expected at the remaining sites. Cheatgrass is present at most sites and common at two sites in pasture 26A (13S03W01A, 13S03W01B). Western juniper is rare in pasture 26B and site 12S03W24 in pasture 26A. Annual production is within 80% of expected and grass:shrub productivity is similar to reference sites. Perennial forb diversity is greatest at site 12S03W24; however, forbs were difficult to distinguish because sampling occurred after the growth period. Leguminous species (milkvetch) are present at all sites except site 13S03W23 in pasture 26B.

Plant Vigor - Plant vigor shows a none-slight degree of departure from reference conditions. Some crown mortality and lower vigor was observed in grass species at all sites, especially pedestalled Sandberg bluegrass plants. Seed heads were present at all sites on bunchgrasses in interspaces and under shrub canopies.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a moderate-extreme degree of departure from reference areas in pasture 26A and a slight-moderate degree of departure in pasture 26B. Cheatgrass is common to abundant at sites 13S03W01A and 13S03W01B in pasture 26A and present in low levels or absent in pasture 26B and site 12S03W24 in pasture 26A. Juniper is widely scattered and showing signs of recruitment at site 12S03W24 in pasture 26A and widely scattered in pasture 26B.

Trend

The general trend in ecological condition was downward in pasture 26A where perennial grass frequencies decreased. The general trend in ecological condition was static in pasture 26B. Site 13S03W01 has a moderate level of surface gravel and stone and site 13S03W22 has a low level of surface stone.

NPFT Studies - Frequencies of bluebunch wheatgrass and Sandberg bluegrass decreased at site 13S03W01 between 1989 and 1998 (Appendix I). Frequencies of bunchgrasses were static at site 13S03W22. Frequencies of forbs (long-leaf phlox, milkvetch, buckwheat) were static or downward between 1989 and 1998 (Appendix J). Frequencies of sagebrush were static at both sites (Appendix J).

Photo Plots/ View Photos - The apparent trend was static for grasses and static to upward for shrubs at site 13S03W01 (Table 22). The apparent trend was static for grasses and static to downward for shrubs at site 13S03W22. Decreaser grasses declined in both photo plots but increased in one of the view photos (13S03W01) and showed improved vigor in 1998 (13S03W22).

Table 22. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, low sagebrush communities, pastures 26A and 26B, Nickel Creek Allotment, 1989-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|----------|------------------------------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 13S03W01 | Shallow Claypan 11-13 | 1989-98 | S-D | S-U | U | S-U |
| 13S03W22 | Shallow Claypan 11-13 ¹ | 1989-98 | D | S-U | D | S |

¹ with Loamy 11-13 inclusions

Shrub Density - Western juniper was not encountered at the trend sites; however, it is widely scattered to the west of 13S03W22.

3.4.6.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Big sagebrush communities showed a moderate departure from reference conditions. Shrubs, cheatgrass, and increaser grasses dominate the pastures.

Integrity/ Diversity - Plant community integrity and native species diversity show a moderate degree of departure from reference conditions in pastures 26A and 26B and a moderate to moderate-extreme degree of departure in pasture 27. Species diversity is generally similar to reference sites at most sites; however, dominant species are different from reference conditions. Shrubs, especially rabbitbrush, are a greater component than expected in all pastures and increaser grasses have replaced decreaser grasses.

Grass cover is less than expected compared to reference sites. Sandberg bluegrass cover is greater than decreaser grass cover at all sites. Bluebunch wheatgrass cover is below that of reference sites. Decreaser grasses are primarily found under shrub canopies. Sandberg bluegrass and bluebunch wheatgrass are the only perennial grass species occurring in most of pasture 27. Bunchgrass diversity is greater in pastures 26A, 26B, and site 12S03W35B in pasture 27. Bunchgrasses, primarily Sandberg bluegrass, are present in interspaces, but below expected levels.

Biological soil crust cover is minimal at all sites and restricted to under shrub canopies where present. Cheatgrass is present at all sites, and is common at sites 12S03W29 and 13S03W04 in pasture 27. Juniper is widely scattered in pasture 26B and at site 12S03W29 in pasture 27.

Juniper is not present in pasture 26A and the majority of pasture 27. Annual production is within 80% of expected at all sites; however, shrub productivity is the primary component and greater than expected. Increaser grass production is greater than decreaser grass production. Observed forb diversity is similar to reference sites in pastures 26A and 26B. Observed forb diversity in pasture 27 is low. Because most forbs had cured and were difficult to observe by mid-July 2001, timing of field surveys may have influenced recorded forb diversity. Leguminous species were observed at all sites except site 12S03W28 in pasture 27.

Plant Vigor - Plant vigor shows a slight degree of departure from reference conditions. Some degree of crown die-out is evident in all pastures, primarily in Sandberg bluegrass plants occurring in interspaces. Pedestals are also common in these plants. Decadent sagebrush plants are present in pasture 26B. Broken sagebrush branches, primarily from historic activities, are present in pastures 26A and 27. Sandberg bluegrass vigor in pastures 26A and 27 is generally greater than in pasture 26B. Seed heads are present at all sites; however, they occur primarily in grasses growing under shrub canopies. Seed heads are rare in pasture 26B. Evidence of recruitment was not recorded.

Noxious/Invasive Plants - During 2000, a 0.5-acre population of Scotch thistle was observed and chemically treated in 13S03W08 in pasture 27. Several small populations of Scotch thistle were observed along Porcupine Creek (13S03W08, 13S03W09) during 2001. Medusahead (*Elymus caput-medusae*) was reported in the vicinity of the Owyhee River (13S03W28 SW1/4) in 1988. The current status of these populations is unknown. Native and exotic invasive species occur in moderate-extreme departures from reference sites. Rabbitbrush is the primary native invasive species. It is common in pasture 26A and dominant or co-dominant with sagebrush in pasture 26B and sites 12S03W29 and 13S03W04 in pasture 27. Cheatgrass is present at all sites and is common at sites 12S03W29 and 13S03W04 in pasture 27.

Trend

The general trend in ecological condition was static in pasture 26B. Shrubs were increasing, but were not replacing grasses. The general trend in ecological condition was static to downward in pasture 27. Bluebunch wheatgrass declined at two sites and shrubs, especially rabbitbrush, increased at all sites.

NPFT Studies - Frequencies of bluebunch wheatgrass were static (12S03W26, 13S03W28) or downward (12S03W29B, 13S03W04) between 1989 and 1998 (Appendix I). Frequencies of Idaho fescue, needlegrass, and Sandberg bluegrass were static. Frequencies of Indian ricegrass and crested wheatgrass decreased at site 12S03W26. Frequencies of squirreltail were static or increased (13S03W04).

Frequencies of long-leaf phlox and lupine were generally static although lupine decreased at site 13S03W28 between 1989 and 1998 (Appendix J). Frequencies of sagebrush were static at all sites (Appendix J).

Photo Plots/ View Photos - The apparent trend was static for grasses and upward for shrubs in pasture 26A (13S03W28) (Table 23). Most dead/decadent sagebrush plants were replaced and recruitment of new shrubs in other areas occurred. The apparent trend was static to upward for grasses and upward for shrubs in pasture 26B. Grasses showed little recruitment in interspaces

and appeared to be replaced by cheatgrass in portions of the 1986 burn area (13S03W04). Rabbitbrush increased at all sites, especially in the burn area. Dead/decadent sagebrush plants were replaced in unburned sites and a few plants were colonizing the burned site.

Table 23. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, big sagebrush communities, pastures 26B and 27, Nickel Creek Allotment, 1989-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|-----------|-------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 13S03W28 | Loamy 10-13 | 1989-98 | D | S-U | U | U |
| 12S03W26 | Loamy 11-13 | 1989-98 | S-U | S-U | S | U |
| 12S03W29B | Loamy 11-13 | 1989-98 | S-D | S-U | U | S-U |
| 13S03W04 | Loamy 11-13 | 1989-98 | U | D | U | U |

Shrub Density - Western juniper was not encountered at any site; however, sparsely distributed trees occurred near sites 12S03W29B and 13S03W28.

3.4.6.3 Herbaceous (Burned) Communities

Approximately 2,556 acres burned in the western portion of pasture 27 in 1986. A Rangeland Health Evaluation Summary Worksheet and a trend study (13S03W04) were conducted in the burned area. There is a downward trend in ecological condition. Decreaser grass cover and diversity appear to be declining. Sandberg bluegrass is replacing bluebunch wheatgrass. Cheatgrass is common. Rabbitbrush is the dominant shrub and little sagebrush recruitment is occurring.

3.4.7 Standard 8: Threatened and Endangered Plants and Animals

3.4.7.1 Redband Trout

Redband trout are not known to inhabit Porcupine Creek in pasture 26B nor Trap Creek in pasture 27. These streams drain small watersheds and have intermittent flows.

3.4.7.2 Wildlife

Riparian Habitat

Stream riparian habitat is very limited within these pastures and of the total of 1.0 stream miles assessed approximately 75 percent (0.75 miles) are functioning properly while 25 percent (0.25 miles) are functioning-at-risk. However, within both inventoried stream reaches vegetation exhibits diverse structure and composition and vigor is high within the properly functioning reach. Six springs are also located in these pastures and riparian habitat is in good condition at five of the six; however, two springs are functioning at risk. At the sixth spring all water has been diverted into a livestock trough and supports no riparian vegetation and is providing no habitat for dependant special status or other animal species.

Other Pertinent Riparian Habitat Information - As discussed under Early Spring Grazing pastures, spring grazing can result in various adverse impacts to special status species habitats and populations and this grazing scenario may result in even greater impacts to most species of neotropical migratory birds since the grazing period is more likely to coincide with the peak nesting season. However, these impacts are partially mitigated by the complete lack of grazing impacts during rest years.

Sage Grouse Habitat Evaluations

Breeding Habitat - Two breeding habitat evaluations were conducted in pasture 26A. At 12S02W31, all seven indicators are in the “suitable habitat” category (Table 24). This evaluation was conducted northeast of Sheep Hills in the northeastern portion of the pasture within a fairly extensive Wyoming big sagebrush/Idaho fescue community. Other perennial grasses included Thurber’s needlegrass, squirreltail, and Sandberg bluegrass. Decreaser grasses at the site are found primarily under the protection of shrubs but are more abundant in the shrub interspaces on adjacent slopes. Vigor of decreaser grasses and forbs is fair to good as is forb abundance and diversity. This site was given an overall rating of “suitable habitat”.

At 13S03W03, four indicators are in the “suitable habitat” category, two indicators are in the “marginal habitat” category, and one indicator is in the “unsuitable habitat” category (Table 24). This evaluation was conducted east of Sheep Hills at the southeast corner of the pasture in a mixed Wyoming and basin big sagebrush/Idaho fescue/bluebunch wheatgrass community. Sandberg bluegrass is the dominant grass species with sparse decreaser grasses located mostly under the protection of shrubs and demonstrating poor to fair vigor. Desirable forbs are fairly abundant and diverse but small and were curing rapidly due to dry conditions. This site was given an overall rating of “marginal habitat” due to the lack of desirable perennial grass cover, limited grass and forb height, and mixed sagebrush growth form.

Table 24. Sage Grouse Breeding Habitat Suitability, 12S03W31 (A) and 13S03W03 (B) in pasture 26A, 13S03W11 (C) and 13S03W22 (D) in pasture 26B, and 12S03W34 (E) in pasture 27, Nickel Creek Allotment, 2001.

| Habitat Indicator | Suitable Habitat | Marginal Habitat | Unsuitable Habitat |
|--|------------------|------------------|--------------------|
| Average Sagebrush Canopy Cover | A, B, C, D, E | | |
| Average Sagebrush Height | A, B, D, E | C | |
| Sagebrush Growth Form | A, D, E | B, C | |
| Average Grass and Forb Height | A, C | B, E | D |
| Average Perennial Grass Canopy Cover | A | D | B, C, E |
| Average Forb Canopy Cover | A, B, D, E | C | |
| Preferred Forb Abundance and Diversity | A, B, C | | D, E |
| Overall Site Evaluation | A | B, C, D, E | |

Two breeding habitat evaluations were conducted in pasture 26B. At 13S03W11, three indicators are in the “suitable habitat” category, three indicators are in the “marginal habitat” category, and one indicator is in the “unsuitable habitat” category (Table 24). This evaluation was conducted in White Cow Basin in the north end of the pasture in a mixed Wyoming and basin big sagebrush/bluebunch wheatgrass community. Low sage with scattered pockets of big sagebrush dominates this portion of the pasture. Sandberg bluegrass and annual cheatgrass are the dominant grass species present while other perennial grasses including bluebunch

wheatgrass, Thurber's needlegrass, and squirreltail are sparsely scattered throughout the site. Forb abundance, diversity, and vigor are all fair. This site was given an overall rating of "marginal habitat" due to the lack of desirable grass and forb cover, sagebrush growth form and excessive height.

At 13S03W22, four indicators are in the "suitable habitat" category, one indicator is in the "marginal habitat" category, and two indicators are in the "unsuitable habitat" category (Table 24). This evaluation was conducted west of Porcupine Creek in the southwest portion of the pasture in a Wyoming big sagebrush/bluebunch wheatgrass community. This portion of the pasture also consists of scattered pockets of big sagebrush within a landscape that is largely dominated by low sagebrush. Sandberg bluegrass and cheatgrass are the dominant grass species present at this site while perennial grasses including bluebunch wheatgrass, Thurber's needlegrass, and Indian ricegrass are more abundant on adjacent slopes. Forb diversity is good but vigor and abundance are poor to fair, probably due to the lack of winter and spring moisture. This site was given an overall rating of "marginal habitat" primarily due to the lack of desirable grass cover and height and, to a lesser extent, limited forb abundance.

One breeding habitat evaluation was conducted in pasture 27 at 12S03W34. Four indicators are in the "suitable habitat" category, one indicator is in the "marginal habitat" category, and two indicators are in the "unsuitable habitat" category (Table 24). This evaluation was conducted on Brace Flat in the north-central portion of the pasture within a Wyoming big sagebrush/bluebunch wheatgrass/Thurber's needlegrass community. Some low sagebrush and rabbitbrush are present and low sagebrush communities dominate the pasture, as a whole. The understory at the site is dominated by Sandberg bluegrass with only scattered decreaser grasses and lots of bare ground. Grass vigor is generally low. Forb diversity is fair but vigor and abundance are poor and at least partially attributable to a lack of winter and spring moisture. This site was given an overall rating of "marginal habitat" primarily due to the lack of desirable grass cover.

Brood-Rearing Habitat - One late brood-rearing habitat assessment was conducted in pasture 26B at 13S03W23. All four habitat indicators are in the "marginal habitat" category (Table 25). The evaluation was conducted along Porcupine Creek, an intermittent stream in the south-central part of the pasture, and was given an overall rating of "marginal habitat" due to the presence of some upland vegetation within the riparian zone, evidence of some erosion and/or bare ground and spotty distribution, limited availability of succulent forbs, and distance to sagebrush cover.

Table 25. Sage Grouse Late Brood-Rearing Habitat Suitability, 13S03W23 (A) in pasture 26B and 12S03W31 (B) in pasture 27, Nickel Creek Allotment, 2001.

| Habitat Indicator | Suitable Habitat | Marginal Habitat | Unsuitable Habitat |
|---|------------------|------------------|--------------------|
| Riparian and wet meadow plant community | B | A | |
| Riparian and wet meadow stability | | A, B | |
| Forb availability | | A, B | |
| Proximity of sagebrush cover | B | A | |
| Overall Riparian/Wet Meadow Site Evaluation | | A, B | |

One late brood-rearing habitat assessment was conducted in pasture 27 at 12S03W31. Two indicators are in the “suitable habitat” category and two indicators are in the “marginal habitat” category (Table 25). The evaluation was conducted along an intermittent stream in the southeastern part of the pasture and was given an overall rating of “marginal habitat” based primarily on evidence of some erosion and/or bare ground and limited availability of succulent forbs due to livestock grazing. Remains of a dead sage grouse were discovered nearby, indicating that the site is likely being used.

General Upland Habitat Assessment

The higher than expected occurrence of sagebrush and other shrubs at most locations in all pastures, while possibly limiting herbaceous production and cover to some extent, is also providing good woody cover, structure and forage for a diversity of neotropical migratory birds, sage grouse and others and may be providing additional protection for some decreaser grasses. Rabbitbrush is common to codominant with sagebrush throughout much of this area and provides inferior nesting cover for sage grouse.

Perennial forbs, a key forage component of sage grouse during the spring, summer, and early fall, are similar to reference areas at some locations and lower at others but since assessments were conducted after many forbs had cured biodiversity and abundance may have been underestimated.

Decreaser grasses make up the primary grass component at all but one of the low sage assessment locations but occurrence is lower than expected at some locations. In big sagebrush communities, decreaser grass cover is generally less than expected and occurs primarily under the protection of shrubs and is likely limiting effective cover for ground nesting and foraging species such as sage grouse, northern harriers, some neotropical migratory birds and others.

Western juniper is scattered throughout pasture 26B and a portion of pasture 27 and, while it provides important habitat for a number of special status and other species, it may be contributing to a gradual decline in habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush obligates.

Other Pertinent Information - As discussed under Early Spring Grazing pastures, spring grazing can result in various adverse impacts to special status species habitats and populations and, as discussed for riparian habitats, this grazing scenario may result in greater impacts to most species of neotropical migratory birds since the grazing period is more likely to coincide with the peak nesting season. However, these impacts are mitigated by the complete lack of grazing impacts during rest years.

3.4.7.3 Plants

Special status plants are not documented in these pastures, but it is likely that Mud Flat milkvetch occurs here.

3.5 Spring/Summer Use (Pastures 1, 3, 5, 8, 18)

Summary

- some active pedestalling of grasses is apparent;
- 4.8 miles of stream are in proper functioning condition, 9.2 miles are in functioning at risk condition;
- 62% of springs are functioning at risk;
- upland vegetation has a static trend in condition in pastures 5 and 8 and a static to downward trend in pastures 1 and 18;
- Sandberg bluegrass cover is greater than expected in low sagebrush communities, big sagebrush communities have increased juniper cover and species composition is shifting away from reference conditions;
- sage grouse breeding habitat is suitable in pasture 1 and 18 and marginal in pasture 5 because of juniper;
- the Mud Flat milkvetch population in pasture 5 is healthy and vigorous;
- the portion of the N. Fork Juniper Woodland ONA/ACEC in pasture 1 received heavy to severe livestock use in 1998 and 2002.

3.5.1 Data Collection

Twenty rangeland health evaluations were conducted in low (11) and big (9) sagebrush communities between July 16 and August 14, 2001 (Table 26, Maps 2N, 2S). Five trend plots were conducted in low (2) and big (3) sagebrush communities between 1983 and 1998 (Table 26, Maps 3N, 3S). Four sage grouse breeding habitat evaluations were conducted in 2001 (Table 26, Maps 2N, 2S).

Table 26. Summary of upland data collected in Spring/Summer Use pastures, Nickel Creek Allotment.

| Pasture | Data Type ¹ | Location | Ecological Site | Condition/Trend ² |
|---------|------------------------|-----------|-----------------------------|------------------------------|
| 1 | RHE | 09S04W35 | V. Shallow Stony Loam 10-14 | + |
| | | 10S04W02 | V. Shallow Stony Loam 10-14 | 0 |
| | | 10S04W09A | Churning Clay 12-16 | + |
| | | 10S04W09B | Shallow Claypan 12-16 | 0 |
| | NPFT | 09S04W35 | Shallow Claypan 12-16 | Down |
| | SBH | 10S04W03 | Clayey 12-15 | Suitable |
| 3 | RHE | 10S04W15 | Loamy 13-16 | + |
| | | 10S04W23A | Shallow Claypan 12-16 | - |
| | | | | |
| 5 | RHE | 10S04W09C | Loamy 13-16 | + |
| | | 10S04W21A | Shallow Claypan 12-16 | 0- |
| | | 10S04W21B | Mahogany Savannah 16-22 | 0 |
| | | 10S04W21C | Loamy 13-16 | 0 |
| | | | | |
| | NPFT | 10S04W21A | Shallow Claypan 12-16 | Static |
| | SBH | 10S04W20 | Loamy 13-16 | Marginal |
| 8 | RHE | 10S03W18 | Loamy 13-16 | - |
| | | 10S03W19 | Shallow Claypan 12-16 | 0 |
| | | 10S03W20 | Loamy 13-16 | + |
| | | 10S03W30 | Shallow Claypan 12-16 | 0 |
| | | | | |
| | | 11S03W04 | Shallow Claypan 12-16 | 0- |

| | | | | |
|----|------|-----------|-----------------------|-------------|
| 18 | | 11S03W10 | Shallow Claypan 12-16 | + |
| | NPFT | 10S03W20 | Loamy 13-16 | Static |
| | SBH | 10S03W19 | Shallow Claypan 12-16 | Suitable |
| | RHE | 11S03W34 | Loamy 11-13 | + |
| | | 12S03W03A | Loamy 11-13 | 0 |
| | | 12S03W09 | Shallow Claypan 12-16 | 0- |
| | | 12S03W10 | Loamy 7-10 | 0- |
| | NPFT | 11S03W34A | Loamy 11-13 | Static-Down |
| | | 12S03W03 | Loamy 11-13 | Static-Down |
| | PP | 11S03W34B | Loamy 11-13 | Down |
| | | 11S03W34C | Loamy 11-13 | Down |
| | SBH | 12S03W03 | Loamy 11-13 | Suitable |

¹ RHE – Rangeland Health Assessment, NPFT – Nested Plot Frequency Transect, PP = Photo Plot, SBH – Sage Grouse Breeding Habitat Evaluation, SRRH – Sage Grouse Brood-Rearing Habitat Evaluation

² + = none-slight departure from reference conditions, 0 slight-moderate departure from reference conditions, - = moderate departure from reference conditions, -- = moderate-extreme departure from reference conditions

3.5.2 Livestock Use

Use in pastures 1, 3, 5, 8, and 18 was variable between 1986 and 2001; however, generally included spring use alternating with summer use (Appendix D). Spring use began as early as mid-April in pastures 5, 8, and 18, but generally began in mid- to late-May. Summer use started in late June or early July and sometimes went through late September or into October. Pastures 3, 5, and 18 were occasionally rested. No use was reported for pasture 3 between 1997 and 2001.

The critical growth period for bluebunch wheatgrass, Idaho fescue, needlegrass, prairie junegrass, and squirreltail occurs during June in pastures 1, 3, 5, and the northern portion of pasture 8. The critical growth period for these grasses and Indian ricegrass occurs in late-May and the first half of June in pasture 18 and the southern portion of pasture 8. The critical growth period for Sandberg bluegrass occurs in mid-May for all pastures. May and June use, and, therefore, use during the critical growth period of perennial grasses, occurred approximately 50% of the time between 1986 and 2001 in pastures 1, 5, 8, and 18. Use in pasture 3 generally occurred after the critical growth period of perennial grasses.

Total actual use ranged between 822 AUMs in 1986 and 2,706 AUMs in 1990, and averaged 1,656 AUMs between 1996 and 2001 (Appendix D).

Upland utilization of perennial grasses was generally light to moderate between 1981 and 1997 (Appendix Q). Utilization was greatest in pasture 18 with moderate use occurring on bluebunch wheatgrass and Indian ricegrass and moderate to heavy use occurring on needlegrass. Utilization of bluebunch wheatgrass was slight to light in pastures 1, 3, and 5. Utilization of Idaho fescue was greatest in pasture 3 (moderate) and on the low end of moderate in the remaining pastures. Utilization of squirreltail was slight to light in pastures 1, 5, 8, and 18. Utilization was generally consistent between years at trend sites. In pasture 18, utilization was greater at site 11S03W34A than at site 12S03W03.

Limited monitoring was conducted of livestock use of riparian vegetation along Castle and Nickel creeks (Table 27). Use by livestock of riparian vegetation on Castle Creek was low during 2000-01. Livestock use of herbaceous vegetation on accessible portions of Nickel Creek was high (median stubble heights of 2 to 3.5 inches).

The N. Fork Juniper Woodland ONA/ACEC was monitored in 1998 and 2002 to assess the status and health of the plant communities. A portion of this ACEC is in pasture 1. The Pleasant Valley Table RNA/ACEC was also monitored in 1998 and 2002. About half of the ACEC is in pasture 1.

Table 27. Median stubble height and percent shrub utilization by livestock for streams grazed during spring/summer, Nickel Creek Allotment (0548), 2002.

| Stream | Allotment (Pasture) | Site | Date | Median Stubble Height (inches) | Percent Shrub Utilization |
|--------|------------------------|--|----------|--------------------------------|---------------------------|
| Castle | 0548 (18) | 11S03W34 | 10/10/01 | ~10.0 | - |
| Castle | 0548 (18) | 11S03W34 NESW, ~0.5 mile below reservoir | 10/31/00 | 7.25 | 12 |
| Nickel | 0548 (16A) | 11S03W07 NW | 10/10/01 | 2.0 | - |
| Nickel | 0548 (16A) 0548 (8) | 11S03W07 NWNW, Above drift fence | 10/10/01 | 3.5 | - |
| Nickel | 0548 (7) 0548 (8) | 11S04W01 SESE, Above Smith/Nickel confluence | 10/10/01 | 4.0 | - |

3.5.3 Standard 1: Watersheds

3.5.3.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in spring/summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight-moderate degree of departure from reference conditions in pastures 1 (09S04W35, 10S04W09A) and 8, a moderate degree of departure in pastures 1 (10S04W02, 10S04W09B), 3 and 18, and a moderate-extreme degree of departure in pasture 5. Active pedestalling is apparent in all pastures, primarily in flow paths, and is most prevalent in pastures 3 and 5. Historic activities are responsible for some of the observed pedestalling.

Soil Surface - The amount of bare ground has a slight-moderate degree of departure from reference conditions in all pastures. Surface gravels and rocks are protecting areas from more severe accelerated erosion in pastures 3, 5, 8, and 18 and sites 09S04W35 and 10S04W02 in pasture 1.

Soil surface indicators have a none-slight degree of departure from reference conditions in pasture 1, a slight-moderate degree of departure in pastures 5, 8, and 18, and a moderate degree

of departure in pasture 3. There is a low occurrence of organic matter content in surface layers in pastures 1 (10S03W10), 3, 5, and 8 (11S03W04). The occurrence of physical soil crusting is greater than expected in pastures 3, 5, and 18. Weak soil surface structure is evident in pastures 1, 3, 5, and 8 (11S03W04, 11S03W05). Soil surface loss is greater than expected in all pastures, especially pastures 3 and 5. Biological soil crust cover in appropriate habitats is less than expected in all pastures except pasture 1.

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pastures 1, 3, 8, and 18 and a slight-moderate degree of departure in pasture 5. The low sagebrush site located by Boni Table in pasture 8 (10S03W19) reflected more closely the vegetative community of the reference sites and site guides. The amount of bunchgrasses in interspatial areas is less than expected in pastures 1, 5, and 18 and sites 11S03W04 and 11S03W05 in pasture 8. There is an imbalance of increaser to decreaser grasses in all pastures except pasture 8. Shrub cover is greater than expected in pasture 3.

NPFT Data

Percent basal cover of decreaser grasses and biological soil crusts were slightly greater than that of increaser grasses in low sagebrush communities between 1989 and 1998 (Table 28). Increaser grass cover increased in pasture 5 between 1989 and 1998. Bare ground cover was similar to gravel cover.

Table 28. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, Spring/Summer Use pastures, Nickel Creek Allotment, 1989-1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|-----------------------|----------------------|----------------------|-----------------------|----------------------|
| | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) |
| Shallow Claypan 12-16 | 4.8 \pm 5.5 (4) | 3.7 \pm 3.8 (4) | 5.1 \pm 52.4 (2) | 25.9 \pm 7.6 (4) |

3.5.3.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

There is a slight-moderate degree of departure from reference conditions for most indicators in spring/summer use pastures. Accelerated erosion is present in all pastures and watershed health is not comparable to reference areas and site guides.

Hydrologic Function – The amount of surface flow patterns and associated pedestalled plants show a slight-moderate degree of departure from reference conditions in all pastures. Pedestalled grasses are most apparent in interspatial areas. Site 11S03W34 in pasture 18 is the only site where pedestals are not apparent. Active pedestalling is apparent in pastures 5, 8, and 18 where it occurs primarily on bunchgrasses in flow patterns. Historic activities are responsible for some of the observed pedestalling. Terracettes are present on steeper areas in pasture 8.

Soil Surface - The amount of bare ground has a none-slight degree of departure from reference conditions in pastures 3, 5, and 18 and a slight-moderate degree of departure in pasture 8 (especially site 10S03W18). A high amount of surface gravels are protecting areas from more severe accelerated erosion in pastures 5 and 8.

Soil surface indicators have a none-slight degree of departure from reference conditions in pastures 3 and 8 and a slight-moderate degree of departure in pastures 5 and 18. There is a loss of surface horizon material in all pastures. Soil loss is primarily historic in pastures 3 and 8. Some current loss is occurring in pastures 5 and 18. Physical soil crusts are apparent only at site 11S03W34 in pasture 18. Slightly weakened soil structure is apparent in pasture 3 and site 10S04W21C in pasture 5. Organic matter is reduced at site 12S03W03A in pasture 18. The occurrence of biological soil crusts in appropriate habitats is less than expected in pastures 5 (10S04W09C) and 18.

Vegetation Cover – The plant community, as it relates to watershed function, has a none-slight degree of departure from reference conditions in pastures 3 and 8, a slight degree of departure in pasture 18, and a slight-moderate degree of departure in pasture 5. The site in pasture 3 most closely resembles reference conditions for diversity and composition. Occurrence of bunchgrasses in interspatial areas is less than expected in pastures 5 (10S04W21B, 10S04W21C) and 8 (10S03W18). There is an imbalance of increaser to decreaser grasses in pastures 5 (10S04W21C) and 18 (11S03W34). Cheatgrass is present in some areas in pastures 3, 5 (10S04W21B), 8 (10S03W18), and 18 (12S03W03A, 12S03W10). Shrub cover is greater than expected in pastures 3 and 8 (10S03W20). Juniper cover is greater than expected in pastures 3, 5, and 8.

NPFT Data

Percent basal cover of decreaser grasses was approximately twice that of increaser grasses between 1983 and 1998 (Table 29). Site 10S03W20 in pasture 8 accounted for the majority of decreaser grass cover. Both increaser and decreaser grass cover increased in pasture 8 between 1989 and 1998. In pasture 18, decreaser and increaser grass cover were similar. In pasture 18, increaser grass increased at site 11S03W34A and decreaser grass cover decreased at site 12S03W03. Biological soil crusts provided insignificant cover. Bare ground dominated the sites.

Table 29. Average percent basal cover for decreaser and increaser grasses, biological soil crusts, and bare ground, Spring/Summer Use pastures, Nickel Creek Allotment, 1983-1998.

| Ecological Site | Decreaser Grasses | Increaser Grasses | Biological Soil Crust | Bare Ground |
|--------------------|----------------------|----------------------|-----------------------|----------------------|
| | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) | mean \pm 95%CI (n) |
| Loamy 11-13, 13-16 | 5.7 \pm 6.6 (6) | 2.7 \pm 1.5 (6) | 0.6 \pm 1.3 (3) | 53.6 \pm 15.0 (8) |

3.5.4 Standard 2: Riparian Areas and Wetlands

About two-thirds of the streams (9.2 of 14.0 miles of stream) located in pastures grazed during spring/summer are in functioning at risk condition. In general, stream segments that are accessible to livestock receive high levels of livestock use, such that cover and density of bank stabilizing species are low, and streambanks are not adequately vegetated to resist the erosive forces of high stream flows. Segments in proper functioning condition are located in rocky canyons that limit livestock access to and use of riparian vegetation. The functioning condition of riparian/wetland areas of five of the eight springs in these pastures appeared to be negatively impacted by livestock grazing as these springs had higher levels of bare ground (10-40%), and riparian vegetation received moderate to high levels of use by livestock.

Stream Inventories/Assessments

The North Fork Owyhee River forms the western boundary of pasture 1 and is in proper functioning condition where rugged, rocky canyons restrict livestock use. However, the downstream-most stream segment (017) and portions of segments 019, 021, and 022 receive high levels of livestock use and are in functioning at risk condition (Table 30, Map 4N). Streambanks are inadequately vegetated to protect them from the erosive forces of high stream flows.

Quaking aspen/red-twig dogwood plant communities in segment 021 (30% of the segment) receive high levels of livestock use. Other portions of this segment receive light levels of livestock use and are in proper functioning condition, but overall the segment is functioning at risk. Similarly, livestock graze portions of segments 019 and 022 during the hot season, such that plant vigor is reduced, and density and cover of riparian vegetation is inadequate to protect streambanks. Segment 018 is largely inaccessible to livestock and overall is in proper functioning condition. Segment 020 was not inventoried because this portion of the stream is located in a sheer-walled rock canyon.

Dons Creek, a tributary to Current Creek, is located on the eastern edge of pasture 1. This stream is in functioning at risk condition. Streambanks are inadequately vegetated to protect them from the erosive forces of high stream flows.

Much of Nickel Creek is in proper functioning condition, but at the low end of the range in condition for that rating (Table 30, Map 4N). Livestock have easier access to portions of Nickel Creek that are in functioning at risk condition (much of the stream is in a rocky, confined canyon that restricts livestock access). In these areas, plant communities are not comprised of bank stabilizing species. In particular, cover and density of willows and other shrubs are lacking.

Hidden Valley Creek is a tributary to Deep Creek located in pasture 8. This stream has ephemeral to intermittent surface flows and was not inventoried.

Castle Creek in pasture 18 is in functioning at risk condition (Table 30). Streambanks are inadequately vegetated to protect banks and dissipate energy during high stream flows. This segment is predominantly vegetated with Kentucky bluegrass, which is not deeply-rooted enough to stabilize streambanks and channels. Water diversions likely negatively impact riparian plant community composition and health on this segment of Castle Creek. Long Meadow Creek was not inventoried in this pasture and likely only has ephemeral stream flows with little or no riparian vegetation present.

About 0.25 mile of Deep Creek is fenced to allow livestock access to the stream in the east-central portion of pasture 18, and a very short segment is fenced to allow livestock to drink from the stream at the far southeast corner of the pasture. The upper segment of Deep Creek (016) in this pasture is functioning at risk. Streambanks are not adequately vegetated to withstand the erosive forces of high stream flows.

Table 30. Riparian Indicators and overall Functioning Condition Rating by Stream Segment, Spring/Summer Use pastures, Nickel Creek Allotment, 2002.

| Riparian/Wetland Indicators: | BLM Stream Segment | | | | | | |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|------------------|
| | N.F. Owyhee 017 | N.F. Owyhee 018 | N.F. Owyhee 019 | N.F. Owyhee 021 | N.F. Owyhee 022 | Dons Cr 001 | Castle Cr 001 |
| diverse age class/structure of hydric vegetation (6) | y | y | n | n | y | y/n | n |
| diverse composition of hydric vegetation (7) | y | y | y | y | y | y | y |
| vegetation reflects maintenance of soil moisture (8) | y | y | y/n | y/n | y/n | y | y |
| plant community comprised of bank stabilizing species (9) | n | y/n | n | y/n | n | n | n |
| hydric vegetation exhibits high vigor (10) | n | y/n | y/n | n | y/n | y | y |
| adequate hydric vegetation cover to protect banks and dissipate energy (11) | n | y/n | n | n | n | n | n |
| adequate large woody material (12) | NA | NA | NA | NA | NA | NA | NA |
| point bars revegetating with hydric species (14) | y | y/n | n | y/n | n | y | y |
| noxious weeds are not increasing | y | y | y | y | y | y | y |
| Overall functioning condition* | FAR | PFC | FAR | FAR | FAR | FAR | FAR |
| Stream miles | 0.9 | 0.9 | 1.1 | 0.9 | 0.9 | 0.25 | 0.9 |
| Riparian acres | 4.2 | 3.2 | 2.8 | 2.2 | 2.1 | unknown | 4.6 |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Table 30 (cont). Riparian Indicators and Functioning Condition Rating by Stream Segment, Spring/Summer Use pastures, Nickel Creek Allotment, 2002.

| Riparian/Wetland Indicators: | Stream Segment | | | | | | | | |
|---|------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|----------------|
| | Nickel Cr 003 | Nickel Cr 004 | Nickel Cr 005 | Nickel Cr 006 | Nickel Cr 007 | Nickel Cr 008 | Nickel Cr 009 | Nickel Cr 010 | Deep Cr 016 |
| diverse age class/structure of hydric vegetation (6) | y | y | y | y | y | y | y | y | y |
| diverse composition of hydric vegetation (7) | y | y | y | y | y | y | y | y | y |
| vegetation reflects maintenance of soil moisture (8) | y | y | y | y | y | y | y | y | y |
| plant community comprised of bank stabilizing species (9) | y/n | y | y | n | y/n | n | y/n | y | y/n |
| hydric vegetation exhibits high vigor (10) | y | y | y | n | y | y | y | y | n |
| adequate hydric vegetation cover to protect banks and dissipate energy (11) | y/n | y | y | n | y | n | y | y | n |
| adequate large woody material (12) | NA | NA | NA | NA | NA | NA | NA | NA | NA |
| point bars revegetating with hydric species (14) | y | y | y | y | y | y | y | y | y |
| noxious weeds are not increasing | y | y | y | y | y | y | y | y | y |
| Overall functioning condition* | FAR-high | PFC | PFC | FAR - mid | PFC-low | FAR-high | PFC - low | PFC - low | FAR |

| Riparian/Wetland Indicators: | Stream Segment | | | | | | | | |
|------------------------------|----------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|-------------|
| | Nickel Cr 003 | Nickel Cr 004 | Nickel Cr 005 | Nickel Cr 006 | Nickel Cr 007 | Nickel Cr 008 | Nickel Cr 009 | Nickel Cr 010 | Deep Cr 016 |
| Stream miles | 0.9 | 0.9 | 0.9 | 0.7 | 1.1 | 1.0 | 0.9 | 1.2 | 0.5 |
| Riparian acres | 3.3 | 3.8 | 3.3 | 2.9 | 6.2 | 5.0 | 3.9 | 2.6 | 2.4 |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Springs

Eight springs are located in pastures grazed during the spring/summer (Table 31). No information was available on the condition of one spring. Two appeared to be in good condition with low levels of bare ground (<5%) and livestock use. Livestock grazing negatively impacted the functioning condition of riparian/wetland areas of five springs as these springs had higher levels of bare ground (10-40%), and riparian vegetation received moderate to high levels of use by livestock. Two springs (Teakettle and Teacup springs) in pasture 8 were developed with the trough placed in center of the wet meadow associated with the spring.

Table 31. Condition of wetland-riparian areas at springs located in pastures grazed during spring/summer, Nickel Creek Allotment, 2002.

| Spring Name | Location | Pasture No. | Percent Bare Ground | Riparian Vegetation/Impacts from Livestock |
|-------------|---------------|-------------|---------------------|---|
| Surprise | 9S04W14 SENW | 1 | none | sedges/rushes; little impact from livestock grazing |
| Big Boggy | 9S04W14 NWSW | 1 | 10-15% | sedges/rushes/willow; trampling, high levels of use of riparian vegetation by livestock |
| Unnamed | 9S04W26 SESE | 1 | 20% | sedges/rushes/willow/grass; trampling and shearing; moderate use of vegetation by livestock |
| Stoneman | 9S04W23 NWSW | 1 | | no information |
| Unnamed | 10S04W14 SESE | 3 | 40% | willow/sedges; high use of riparian vegetation by livestock |
| Camp | 11S03W5 NENE | 8 | <5% | juniper/sedges/rushes/grasses; no livestock use on 6/26/96 |
| Teakettle | 10S04W36 SESW | 8 | 30% | grasses/clover at spring, willow/sedges in meadow; developed spring - trough in center of wet meadow; trampling and pugging at trough; high use of riparian vegetation by livestock |
| Teacup | 10S04W36 SENW | 8 | 10% | willow/sedges/rushes/thistle; developed spring - trough in center of wet meadow; some trampling and shearing, high use of riparian vegetation by livestock |

Trend

Nickel Creek was assessed for functioning condition in 1998 and 1999. Stream segments 003, 006, and 008 were evaluated as functioning at risk in both years indicating a static trend in condition.

3.5.5 Standard 3: Stream Channel/Floodplain

Of 14 miles of stream channel located in pastures grazed during spring/summer, 71% (9.9 miles) are functioning properly. Rugged canyons and rocky floodplains help to maintain stable channels on North Fork Owyhee River and Nickel Creek.

Stream Inventories/Assessments

Much of the North Fork Owyhee River and Nickel Creek are located in rugged, rocky canyons that help maintain stable channels and floodplains (Table 32), and also limit livestock access to and use of riparian plant communities on some stream segments. Channels and floodplains of these two streams are properly functioning with the exception of the downstream-most segment of the North Fork and some segments of Nickel Creek, which have wide and shallow channels for the landscape setting.

Dons Creek is in functioning at risk condition. The stream channel has a high width/depth ratio for the landscape setting and the channel also has been straightened. Additionally, the channel is vertically unstable with several 1 to 3 foot deep headcuts present (Table 32).

Castle Creek is in functioning at risk condition in pasture 18. The stream channel is too wide and shallow for the landscape setting (Table 32). The lack of bank-stabilizing species allows the channel and streambanks to scour and widen during high stream flows.

The 0.25 mile long segment of Deep Creek that is in pasture 18 is in functioning at risk condition. Streambanks and the floodplain are inadequately vegetated to dissipate energy of high flows and excessive amounts of sediment are being deposited in this reach. The weakly vegetated banks allow the stream to erode and scour banks and channels. As a result the stream is too wide and shallow for the landscape setting. Past disturbances on upstream segments in poor condition likely contributed to the excessive deposition of sediment in this segment of Deep Creek.

Table 32. Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Spring/Summer Use pastures, Nickel Creek Allotment, 2002.

| Stream Channel/Floodplain Indicators: | BLM Stream Segment | | | | | | | |
|--|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|----------------|------------------|
| | N.F. Owyhee 017 | N.F. Owyhee 018 | N.F. Owyhee 019 | N.F. Owyhee 021 | N.F. Owyhee 022 | Dons Cr 001 | Deep Cr 016 | Castle Cr 001 |
| floodplain inundated frequently (1) | y | y | y | y | y | y | y | y |
| beaver dams are active and stable (2) | NA | NA | NA | NA | NA | NA | NA | NA |
| sinuosity, w/d ratio, gradient in balance with landscape setting (3) | n | y | y | y | y | n | n | n |
| riparian area is widening or has achieved potential extent (4) | y/n | y/n | y/n | y/n | y/n | n | y | y |
| upland watershed not contributing to riparian degradation (5) | y | y | y | y | y | y | y | y |
| floodplain and channel characteristics dissipate energy (13) | n | y | y | y | y | n | n | y |
| lateral stream movement associated with natural sinuosity (15) | y | y | y | y | y | y | y | y |
| system is vertically stable (16) | y | y | y | y | y | n | y | y |
| no excessive erosion or deposition (17) | y | y | y | y | y | y | n | y |
| Overall functioning condition* | FAR | PFC | FAR | FAR | FAR | FAR | FAR | FAR |

| Stream Channel/Floodplain Indicators: | BLM Stream Segment | | | | | | | |
|---------------------------------------|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|----------------|----------------|------------------|
| | N.F. Owyhee 017 | N.F. Owyhee 018 | N.F. Owyhee 019 | N.F. Owyhee 021 | N.F. Owyhee 022 | Dons Cr 001 | Deep Cr 016 | Castle Cr 001 |
| Stream miles | 0.9 | 0.9 | 1.1 | 0.9 | 0.9 | 0.25 | 0.5 | 0.9 |
| Riparian acres | 4.2 | 3.2 | 2.8 | 2.2 | 2.1 | unknown | 2.4 | 4.6 |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

Table 32 (cont). Stream Channel/Floodplain Indicators and Functioning Condition Rating by Stream Segment, Spring/Summer Use pastures, Nickel Creek Allotment, 2002.

| Stream Channel/Floodplain Indicators: | BLM Stream Segment | | | | | | | |
|--|--------------------|------------------|------------------|------------------|------------------|------------------|------------------|------------------|
| | Nickel Cr 003 | Nickel Cr 004 | Nickel Cr 005 | Nickel Cr 006 | Nickel Cr 007 | Nickel Cr 008 | Nickel Cr 009 | Nickel Cr 010 |
| floodplain inundated frequently (1) | y | y | y | y | y | y | y | y |
| beaver dams are active and stable (2) | NA | NA | NA | NA | NA | y | y/n | NA |
| sinuosity, w/d ratio, gradient in balance with landscape setting (3) | y/n | y | y | n | y/n | y/n | y/n | y/n |
| riparian area is widening or has achieved potential extent (4) | y | y | y | y | y | y | y | y |
| upland watershed not contributing to riparian degradation (5) | y | y | y | y | y | y | y | y |
| floodplain and channel characteristics dissipate energy (13) | y | y | y | y | y | y | y | y |
| lateral stream movement associated with natural sinuosity (15) | y | y | y | y | y | y | y | y |
| system is vertically stable (16) | y | y | y | y | y | y | y | y |
| no excessive erosion or deposition (17) | y | y | y | y | y | y | y | y/n |
| Overall functioning condition* | FAR - high | PFC | PFC | FAR | PFC -low | FAR - high | PFC - low | PFC - low |
| Stream miles | 0.9 | 0.9 | 0.9 | 0.7 | 1.1 | 1.0 | 0.9 | 1.2 |
| Riparian acres | 3.3 | 3.8 | 3.3 | 2.9 | 6.2 | 5.0 | 3.9 | 2.6 |

(Y=yes, N=no, Y/N=both)

() - item # on Function/Health Assessment

* PFC- proper functioning condition, FAR- functioning at risk, NF- nonfunctioning (overall rating determined from examination of both riparian and channel/floodplain indicators)

3.5.6 Standard 4: Native Plant Communities

3.5.6.1 Low sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Low sagebrush communities showed a slight-moderate departure from reference conditions. Idaho fescue cover is similar to expected; however, Sandberg bluegrass cover is greater than expected and interspatial grass cover is less than expected. Rock cover dominated sites 10S03W19 and 11S03W05 in pasture 8 and 12S03W09 in pasture 18. Gravel cover was a significant component at site 11S03W10 in pasture 8. Rock or gravel cover was a relatively minor component at the remaining sites.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure in pastures 1, 5, 8, and 18, and a moderate degree of departure in pasture 3. Decreaser grasses (primarily Idaho fescue) are the primary grass component at sites 09S04W35 and 10S04W02 in pasture 1 and sites 11S04W04, 11S04W05, and 10S04W19 in pasture 8. Sandberg bluegrass occurrence is greater than expected in pastures 3, 5, and 18 and site 11S03W10 in pasture 8 where it is the dominant grass. Bluebunch wheatgrass occurs less than expected at most sites. Occurrence of bunchgrasses in shrub interspaces is less than expected in pastures 1 (10S04W09A), 5, 8 (11S04W04, 11S04W05), and 18 and as expected at the remaining sites. Low sagebrush abundance is greater than expected in pasture 3 and as expected in the remaining pastures.

Biological soil crust cover is less than expected at most sites and soil crusts are generally not found in shrub interspaces. Biological soil crust cover is not present at site 10S04W21 in pasture 5 or site 11S03W05 in pasture 8. Cheatgrass is present in low levels in pastures 1 (10S04W02), 3, 8 (11S03W10), and 18. Western juniper is a co-dominant at sites 09S04W35 and 10S04W02 in pasture 1 and scattered at sites 11S03W10 and 10S03W19 in pasture 8. Annual production is within 80% of expected and grass:shrub productivity is similar to reference sites except at site 10S04W23A in pasture 3 where Sandberg bluegrass productivity is greater than expected. Perennial forb diversity is greater in pastures 8 and 18 than in pastures 1, 3, and 5; however, timing of field surveys may have influenced recorded forb diversity. Leguminous species (lupine) are present at site 11S03W10 in pasture 8 and are not apparent at other sites.

Plant Vigor - Plant vigor shows a slight-moderate degree of departure from reference conditions at site 10S04W09A in pasture 1, pasture 5, and site 11S03W04 in pasture 8. Plant vigor shows a none-slight degree of departure in the remaining areas. In areas with a slight-moderate departure from reference conditions, greater than expected crown die-off in Idaho fescue and Sandberg bluegrass and low vigor in bluebunch wheatgrass are evident. Crown die-off is present in other areas, but not substantially different than expected. Pedestals are present at all sites and active in flow paths at most sites. Seed heads are present at all sites on bunchgrasses in interspaces and under shrub canopies except for Idaho fescue and bluebunch wheatgrass in pasture 3. Recruitment of bunchgrasses is occurring at all sites. Recruitment of shrubs is occurring at site 11S03W10 in pasture 8 and in pasture 18.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a none-slight degree of departure from reference areas in pasture 18, a slight-moderate degree of departure in pastures 1 and 8 and a moderate degree of departure in pastures 3 and 5. Cheatgrass occurs in low levels at sites 09S04W35 and 10S04W02 in pasture 1, 11S03W10 in pasture 8, and in pastures 3 and 18. Cheatgrass is not present in pasture 5 and the remaining sites in pasture 1 and 8. Juniper is a co-dominant species at sites 09S04W35 and 10S04W02 in pasture 1. Juniper is widely scattered and showing signs of recruitment at site 10S04W21A in pasture 5 and sites 10S03W30, 11S03W04, and 11S03W10 in pasture 8. Juniper is either not present or occurs on the fringes of the remaining sites.

Trend

The general trend in ecological condition was downward in pasture 1 where perennial grass frequencies decreased and shrub frequencies increased. The general trend in ecological condition was static in pasture 5. Both sites have moderate gravel cover. Site 09S04W35 in pasture 1 has no stone cover and site 10S04W21A in pasture 5 has a low level of surface stone.

NPFT Studies - Frequencies of Idaho fescue, needlegrass, and squirreltail were static between 1989 and 1998 (Appendix K). Prairie junegrass disappeared from site 09S04W35. Sandberg bluegrass frequency in plot 1 decreased at 10S04W21A; however, the overall frequency was very high. Frequencies of longleaf phlox were static (Appendix L). Frequency of sagebrush increased at 09S04W35 and was static at 10S04W21A (Appendix L).

Photo Plots/ View Photos - The apparent trend was downward for grasses and shrubs at site 09S04W35 (Table 33). Abundance and vigor of grasses and shrubs declined. The apparent trend was static for grasses and shrubs at site 10S03W21A.

Table 33. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, low sagebrush communities, pastures 1 and 5, Nickel Creek Allotment, 1989-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|-----------|-----------------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 09S04W35 | Shallow Claypan 12-16 | 1989-98 | S-D | D | D | D |
| 10S04W21A | Shallow Claypan 12-16 | 1989-98 | S | S-U | D | S |

Shrub Density - Western juniper increased by one tree (from two to three) at site 09S04W35 between 1989 and 1998. Juniper was not encountered at site 10S04W21A; however, it is common adjacent to the site.

3.5.6.2 Big sagebrush communities

Rangeland Health Evaluation Summary Worksheets

Big sagebrush communities showed a slight-moderate departure from reference conditions. Species diversity is generally similar to reference conditions; however, species composition often departs from expected conditions, especially where juniper dominates sites in pasture 3, 5, and 8.

Integrity/ Diversity - Plant community integrity and native species diversity show a slight-moderate degree of departure from reference conditions. Species diversity is generally similar to reference sites; however, species composition is different from reference conditions at some

sites. Sandberg bluegrass, shrubs, and juniper are a greater component than expected in areas where species composition departs from expected.

Overall occurrence of bunchgrasses is lower than expected at sites 10S04W21B and 10S04W21C in pasture 5 and site 10S03W18 in pasture 8 and similar to reference conditions at the remaining sites. Idaho fescue occurrence is similar to reference conditions in pastures 3 and 8, and at sites 10S04W15 and 10S04W21B in pasture 5 and 12S03W03A in pasture 18. Bluebunch wheatgrass cover is generally below that of reference sites. Sandberg bluegrass occurrence is greater than expected at site 10S04W21B in pasture 5 and sites 12S03W10 and 11S03W34 in pasture 18. Bunchgrasses are found in shrub interspaces except at sites 10S04W21B and 10S04W21C in pasture 5 where occurrence of interspatial grasses is less than expected. Mountain big sagebrush occurrence is greater than expected in pastures 3, 5 (10S04W09C), and 8 (10S03W20) and similar to reference conditions at the remaining sites. The shrub component is less than expected at the Mahogany Savannah site (10S04W21B) in pasture 5. Big sagebrush occurrence is as expected in pasture 18. Rabbitbrush occurrence is greater than expected at sites 10S04W21C (pasture 5) and 12S03W10 (pasture 18).

Biological soil crust cover is reduced at sites 10S04W09C and 10S04W21B in pasture 5 and 12S03W03A and 12S03W10 in pasture 18. Biological soil crust cover is similar to reference conditions at the remaining sites. Cheatgrass is present in low levels along the Owyhee Uplands Backcountry Byway in pasture 3 and at sites 10S04W21C in pasture 5, 10S03W18 in pasture 8, and 12S03W03A and 12S03W10 in pasture 18. Juniper is common to dominant in pastures 3, 5, and 8. Juniper is sparse or absent in pasture 18 and sparse at site 10S04W19 in pasture 8. Annual production is within 80% of expected at all sites; however, juniper productivity is greater than expected in pastures 1, 3, 5, and 8. Observed forb diversity is similar to reference areas at most sites; however, observed forb diversity is low at sites 10S04W21B in pasture 5 and 10S03W18 in pasture 8. Because most forbs had cured and were difficult to observe by mid-July 2001, timing may have influenced recorded forb diversity. Leguminous species, primarily lupine, were observed in all pastures except sites 10S04W21B and 10S04W21C in pasture 5 and 10S03W18 in pasture 8.

Plant Vigor Plant vigor shows a none-slight degree of departure from reference conditions. Some crown die-out is evident in all pastures; however, not more than expected. Pedestals are present at most sites but relatively few are active. Mountain mahogany die-off is evident in pasture 5 where juniper trees occur. Seed heads are present on grasses occurring in interspaces and under shrub canopies in pastures 3, 8, and 18. Seed heads occur on Idaho fescue, but not on other grasses at site 10S04W21B and are present in low levels in the remainder of pasture 5. Recruitment of grasses is evident in all pastures. Recruitment of bitterbrush is evident at sites 10S04W21B and 10S04W21C in pasture 5.

Noxious/Invasive Plants - Noxious weeds were not observed. Invasive plants show a slight-moderate degree of departure from reference areas in pasture 18 and a moderate-extreme degree of departure in pastures 3, 5, and 8. Cheatgrass occurs in disturbed areas in pasture 3 and in the clearcut (10S04W21C) in pasture 5. Cheatgrass occurs in low levels at site 10S03W18 in pasture 8 and sites 12S03W03A and 12S03W10 in pasture 18. Cheatgrass is not present in the remaining sites in pastures 5, 8, and 18. Rabbitbrush occurs at greater than expected levels at site 10S04W21C in pasture 5 and site 12S03W10 in pasture 18. Juniper is common in pastures 3

8 and at sites 10S04W21B and 10S04W21C in pasture 5. Juniper is common and increasing at the clearcut site in pasture 5. Juniper is widely scattered at sites 11S03W34 and 12S03W03A in pasture 18.

Trend

The general trend in ecological condition was static in pasture 8 where bluebunch wheatgrass increased and shrubs decreased; however, juniper showed a slight increase. The general trend in ecological condition was static to downward in pasture 18, where increaser grasses and rabbitbrush increased and decreaser grass frequencies were static.

NPFT Studies - Frequencies of bluebunch wheatgrass were static in pasture 18 between 1983 and 1998 and upward in pasture 8 between 1989 and 1998 (Appendix K). Frequencies of western wheatgrass (*Agropyron smithii*) decreased in pasture 8; however, field observers may have combined western wheatgrass with bluebunch wheatgrass in 1998. Frequencies of Idaho fescue and squirreltail were static in pastures 8 and 18. Frequencies of Sandberg bluegrass were static in pasture 8 and upward in pasture 18.

Frequencies of long-leaf phlox and lupine were static in pasture 18 between 1983 and 1998 (Appendix L). Frequencies of big sagebrush were static at all sites and frequency of low sagebrush decreased in pasture 8 (Appendix L).

Photo Plots/ View Photos - The apparent trend was static to downward for grasses and downward for shrubs in pasture 8 (10S03W20) (Table 34). Most dead/decadent sagebrush plants were not replaced; however, a juniper tree became established. The apparent trend was static for grasses and upward for shrubs in pasture 18. Sandberg bluegrass showed some recruitment in interspaces at one site (12S03W03); however, decreaser grasses did not appear to increase in frequency or vigor at either site. Rabbitbrush increased at site 11S03W34 and sagebrush increased slightly at site 12S03W03. Western juniper increased slightly in uplands adjacent to 11S03W34; however, density remained sparse.

Table 34. Apparent trend in abundance (D = downward, S = static, U = upward) of perennial grasses and shrubs in photo plots and view photos, big sagebrush communities, pastures 8 and 18, Nickel Creek Allotment, 1970-98.

| Transect | Range Site | Evaluation Period | Grasses | | Shrubs/ Trees | |
|-----------|-------------|-------------------|---------|--------|---------------|--------|
| | | | Plot | Photos | Plot | Photos |
| 10S03W20 | Loamy 13-16 | 1989-98 | D | S | D | D |
| 11S03W34A | Loamy 11-13 | 1970-98 | S | D | U | U |
| 11S03W34B | Loamy 11-13 | 1970-98 | S-U | S-D | S | S-U |
| 11S03W34C | Loamy 11-13 | 1983-98 | S | | U | |
| 12S03W03 | Loamy 11-13 | 1983-98 | U | S-U | S | U |

Shrub Density - One western juniper became established at site 10S03W20 between 1989 and 1998 and mature junipers were common in the surrounding uplands. Juniper was not encountered at any site in pasture 18; however, sparsely distributed trees occurred near site 11S03W34.

Herbaceous (Burned/Treated) Communities

Three fires occurred in pasture 8 between 1987 and 2000. In 1987, approximately 108 acres burned adjacent to Nickel Creek in the southern part of the pasture. In 1998, approximately 60 acres burned on the west side of Boni Table (10S03W31). In 2000, 89 acres burned in the northern portion of pasture 8, part of the fire described in section 3.1.4.3. No worksheets were completed in these burns.

Approximately 218 acres of juniper woodland were clearcut between 1986 and 1994 in the southwest portion of pasture 5 (10S04W09C, 10S04W20, 10S04W21). Tree trunks were removed and branches were left. A Rangeland Health Evaluation (10S04W21C) was conducted in a Loamy 13-16 community and is discussed in section 3.5.6.2.

3.5.6.3 ACEC Communities

Monitoring of livestock use in the North Fork Juniper Woodland ONA/ACEC (pasture 1) was conducted in 1998 and 2002. Trailing and trampling were causing heavy soil disturbance both years. Bluebunch wheatgrass and Idaho fescue were grazed to ground level throughout the ACEC in 2002. Cattle were apparently moving between salt blocks found at 10S04W04 and Tobacco Meadows by trailing along the north-facing slope of the river above the canyon rim.

Upland areas in the Pleasant Valley ACEC were reported as “intact” in 2002 apparently due to the rocky terrain. The intermittent stream that runs northwest through the ACEC was heavily impacted. Cattle use of the area was largely restricted to this stream, again due to the rocky table. Livestock use around the stock pond in Section 9 was, as expected, severe, though the pond was dry at the time of monitoring.

3.5.7 Standard 8: Threatened and Endangered Plants and Animals

3.5.7.1 Redband Trout

Redband trout inhabit the North Fork Owyhee River in pasture 1, Nickel Creek in pastures 3 and 8, and Castle and Deep creeks in pasture 18. Nine of 13.8 miles of stream inhabited by redband trout in these pastures are in functioning at risk condition and providing unsuitable habitat for the maintenance of viable trout populations.

Habitat conditions are unsuitable because cover and density of bank stabilizing species are low, and streambanks are not adequately vegetated to resist the erosive forces of high stream flows. Unstable streambanks increased width/depth ratios and reduced the living space for redband trout. Wide, shallow stream channels and lack of streamside vegetation resulted in increased solar heating of the stream such that temperatures exceeded state criteria for cold water biota in Castle, Deep, and Nickel creeks, and the North Fork Owyhee River. Livestock grazing was a significant factor affecting the cover, density, and composition of streamside vegetation on all four streams.

Segments of Nickel Creek and the North Fork Owyhee River are in proper functioning condition where rocky canyons limit livestock access to and use of riparian vegetation. These segments (totaling 4.8 miles of stream) have a well-developed canopy of riparian shrubs, and are likely providing marginally suitable habitat for redband trout. Habitat quality of these segments is likely negatively impacted by basin-wide increases in stream temperature.

3.5.7.2 Wildlife

Riparian Habitat

Within spring/summer use pastures approximately 34 percent (4.8 miles) of the 14.0 miles of assessed stream riparian habitat are functioning properly while 66 percent (9.2 miles) are rated as functioning-at-risk. Of the three indicators that are most directly related to quality of habitat for most dependant special status animals, 6) a diverse age class/structure of hydric vegetation is present along 10.85 stream miles, 7) a diverse composition of hydric vegetation is present along all 14.0 miles and 10) high vigor of hydric vegetation is demonstrated along 7.1 miles. However, most functioning-at-risk reaches do not contain adequate hydric vegetation to protect streambanks and dissipate energy, which leaves these reaches at high risk of losing habitat to erosion during high flow events.

Eight springs are located in these pastures. Livestock use is low and riparian habitat is in good condition at two of these springs while five are receiving moderate to high levels of livestock use that is adversely affecting functionality and habitat quality for special status animals. No information is available on one spring.

Other Pertinent Riparian Habitat Information - As previously discussed, spring grazing can result in various adverse impacts to special status species habitats and populations by reducing cover and disturbing and destroying nests and young during the critical breeding season. Summer/hot season grazing also adversely impacts riparian habitats for special status species because livestock tend to spend more time in these habitats during this time of year seeking water, shade, and succulent vegetation, all of which tend to be more lacking in the uplands. The results are often higher utilization levels, increased trampling and disturbance of habitat and populations and, depending upon when livestock are removed, too little time for vegetation to complete adequate regrowth.

Sage Grouse Habitat Evaluations

Breeding Habitat - A single breeding habitat evaluation was conducted in pasture 1 at 10S04W03. Six indicators are in the “suitable habitat” category and one indicator is in the “marginal habitat” category (Table 35). This evaluation was conducted on Pleasant Valley Table mostly in a silver sagebrush/Idaho fescue community and partially in and adjacent to a low sagebrush/Idaho fescue community. Sandberg bluegrass and junegrass are also common and squirreltail is sparse within the site. Perennial grass vigor is relatively poor in the silver sage community and fair in the low sage community. Forb abundance and diversity are good throughout, but both forb and decreaser grass abundance and vigor were higher in the low sage community. This site was given a qualified rating of “suitable habitat” considering the fact that it is dominated by silver sagebrush and low sagebrush which are generally not considered to be preferred as nesting cover for sage grouse.

One breeding habitat evaluation was conducted in pasture 5 in a 200-300 acre juniper woodcut located in southwest corner of the pasture in 10S04W20. Six indicators are in the “suitable habitat” category and one is in the “marginal habitat” category (Table 35). The assessment site is in a mountain big sagebrush/Idaho fescue/bluebunch wheatgrass community that was formerly dominated by western juniper. Antelope bitterbrush, squirreltail, and Sandberg bluegrass are also common with generally fair vigor and production of decreaser grasses and fair forb diversity and abundance. This was a drought year and forbs were already beginning to dry up at this location, possibly resulting in a forb cover value that was lower than it would have been earlier in the season. Despite the fact that all but one of the indicators are in the suitable habitat category, this site and pasture were given an overall rating of “marginal habitat” due to the small size of this site within a landscape and pasture that is dominated by western juniper.

Table 35. Sage Grouse Breeding Habitat Suitability, 10S04W03 (A) in pasture 1, 10S04W20 (B) in pasture 5, 10S03W19 (C) in pasture 8, and 12S03W03 (D) in pasture 18, Nickel Creek Allotment, 2001.

| Habitat Indicator | Suitable Habitat | Marginal Habitat | Unsuitable Habitat |
|--|------------------|------------------|--------------------|
| Average Sagebrush Canopy Cover | B | A, C, D | |
| Average Sagebrush Height | A, B, C | D | |
| Sagebrush Growth Form | A, B, C, D | | |
| Average Grass and Forb Height | A, B, C, D | | |
| Average Perennial Grass Canopy Cover | A, B, C, D | | |
| Average Forb Canopy Cover | A, C, D | B | |
| Preferred Forb Abundance and Diversity | A, B, C, D | | |
| Overall Site Evaluation | A, C, D | B | |

One breeding habitat evaluation was conducted in pasture 8 at 10S03W19. Six indicators are in the “suitable habitat” category and one indicator is in the “marginal habitat” category (Table 35). This evaluation was conducted in a very robust low sagebrush/Idaho fescue community at the extreme northern end of Boni Table and the northern third of the pasture. Scattered stands of western juniper occur on adjacent hills and breaks and Sandberg bluegrass is fairly abundant. Both Idaho fescue and a diversity of perennial forbs are abundant and vigorous. Even though this site is located in a low sagebrush community, which would not typically be considered suitable breeding habitat, all but one of the indicators, including average sagebrush height, are in the suitable habitat category and, for this reason, was given an overall rating of “suitable habitat”.

One breeding habitat evaluation was conducted in pasture 18 at 12S03W03. Five indicators are in the “suitable habitat” category and two indicators are in the “marginal habitat” category (Table 35). This evaluation was conducted on Ben Mills Flat at the eastern edge of the pasture in an extensive mixed Wyoming and basin big sagebrush/Idaho fescue/bluebunch wheatgrass community. Decreasers grasses and desirable forbs are abundant and vigorous. Even though the sagebrush component has a slightly lower cover value and taller average height than is desirable, this site was given an overall rating of “suitable habitat” because of the healthy herbaceous component and extensive stand size.

General Upland Habitat Assessment

Both low and big sagebrush occurrence is higher than expected in pasture 3 and big sagebrush higher than expected at one location each in pastures 5 and 8 and lower than expected at one site in pasture 5. Sagebrush occurrence is as expected at all other sites and, along with a diversity of other shrubs, is generally providing good woody cover, structure and forage for a diversity of neotropical migratory birds, sage grouse, pygmy rabbits, and other species throughout the majority of the area included in the spring/summer use pastures. Where sagebrush occurrence is higher than expected it may be limiting herbaceous cover for ground nesting species to some extent but may also be providing additional protection for desirable grasses and additional woody cover and structure for a variety of other species.

Perennial forbs, a key forage component of sage grouse during the spring, summer, and early fall, are similar to reference areas at most locations and lower at some. However, assessments were conducted after many forbs had cured, possibly resulting in their being underestimated.

Bunchgrass occurrence is variable in these pastures with Idaho fescue being similar to reference sites at a number of sites but less than expected at others while bluebunch wheatgrass occurrence is less than expected at most sites. Bunchgrass occurrence in shrub interspaces is less than expected at most sites within low sage communities and similar to reference sites in most big sage communities. Overall, the occurrence of desirable bunchgrasses is less than expected in these pastures and is likely to be limiting effective cover for ground nesting and foraging species such as sage grouse, northern harriers, some neotropical migratory birds, and others at many locations.

Western juniper is common to dominant in big sage communities in pastures 3, 5, and much of pasture 8 and, while providing important habitat for a number of special status and other species, may be contributing to a gradual decline in habitat quality/suitability for sage grouse and, to a lesser extent, other sagebrush obligates.

Other Pertinent Information - As discussed under previous sections, spring grazing can result in various adverse impacts to special status species habitats and populations and, as discussed for riparian habitats, this grazing scenario may result in greater impacts to most species of neotropical migratory birds since the grazing period is more likely to coincide with the peak nesting season. However, these impacts are mitigated by the complete lack of grazing impacts during rest years. Summer grazing generally occurs after the growing for most upland herbaceous vegetation and after the breeding season for most special status animals and other wildlife making it less likely to result in serious adverse impacts to habitats or populations.

3.5.7.3 Plants

The Mud Flat milkvetch population in pasture 5 was found to be healthy and vigorous in 2002. The occurrence is large, with over 1,000 plants. Livestock use was having no observable impact and salt and water developments were not found in the vicinity of any plants.